The Garden Journal

of The New York Botanical Garden

Vol. 2, No. 1 Jan.-Feb., 195

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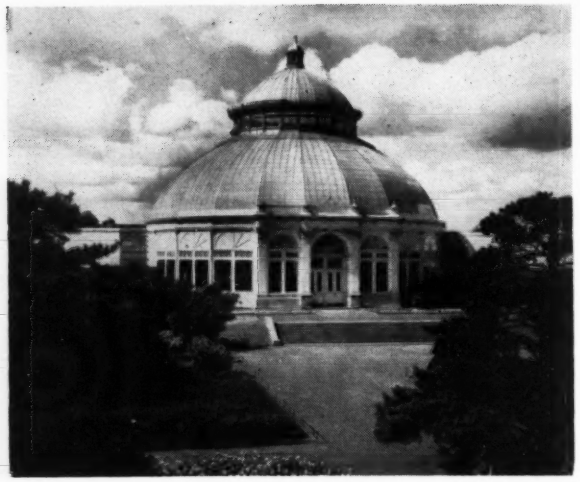

Washington's Birthday Show, starting February 15 and continuing for three week-ends.

Dutch Bulb Show, starting March 7 and continuing for three week-ends.

Easter Show, starting April 4 and continuing for three week-ends.

DOROTHY EBEL HANSELL
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THE GARDEN JOURNAL
of The New York Botanical Garden

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January-February 1952

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AMONG OUR CONTRIBUTORS

DR. M. E. BOTTOMLEY has been Professor of Landscape Architecture, College of Applied Arts, University of Cincinnati, for the past twenty-five years; is author of ART OF HOME LANDSCAPING and NEW DESIGNS OF SMALL PROPERTIES . . . DR. FRED V. GRAU developed an interest in grass at an early age, while helping his father prepare grass specimens from their Nebraska farm for showing at county and state fairs. As extension agronomist in Pennsylvania 1935—1945, he carried the story of "Better Turf and Better Pastures" to the people of that state. On leave of absence during World War II, Dr. Grau assisted the War Department in the military grassing program in the United States. For the past six years he has been Director of the U.S. Golf Association Green Section, U.S.D.A. . . . DR. DAVID D. KECK is Head Curator of The New York Botanical Garden. . . . DR. WILLIAM J. ROBBINS is Director of The New York Botanical Garden. . . . T. H. EVERETT, Horticulturist of The New York Botanical Garden, is well known for his writings and lectures on garden topics; his new book on flower gardening, a companion to his popular GARDENING HANDBOOK, is scheduled to make its appearance in March 1952. . . . B. Y. MORRISON retired on November 30, 1951 after thirty years' service with the U. S. Department of Agriculture. He had been in charge of the Division of Plant Exploration and Introduction and, since 1937, Acting Director of the U. S. National Arboretum. Mr. Morrison will continue as consultant to the Arboretum, visiting the capitol city whenever he can tear himself from his new home and garden at Pass Christian, Mississippi. His writings have appeared in numerous publications including the *National Horticultural Magazine*, which he has edited since 1926. . . . SOPHIA (MRS. ROBERT E.) NAUMBURG, active in garden clubs in New Jersey, and a nationally accredited flower show judge, is author of two books, TRICKS OF MAKING YOUR OWN CORSAGES and TRICKS OF GROWING HOUSE PLANTS IN EVERY WINDOW. . . . J. FRANK JOYNER AND EDWARD O. GANGSTAD are agronomists by profession. Mr. Joyner had his basic training in botany and field experience as a naturalist while traveling with the late Dr. O. F. Cook of the U. S. Department of Agriculture; Dr. Gangstad's basic training was in plant biochemistry under Dr. Carl Paul Link of the University of Wisconsin, and his experience has been the application of that field to agronomy. . . . CHARLES H. MUELLER is the author of BULBS FOR BEAUTY. His attractive bulb farm at New Hope, Pa., is a mecca for garden lovers. ADRIENNE (MRS. C. B.) REED is Chairman of the New York Unit, Herb Society of America.

CREDIT FOR ILLUSTRATIONS

Front cover, kodachrome of roof garden, Derry and Toms, Kensington, England, by T. H. Everett; pp. 2, 3, drawings from New Design of Small Properties by M. E. Bottomley, 1948—with permission of the Macmillan Co.; pp. 4, 5, author; p. 6, Provincial Archives, Victoria, B.C.; p. 7, J. Horace MacFarland Co.; pp. 8, 9, Weyerhauser Timber Co., Dept. of Information; pp. 10, 11, E. N. Mitchell; pp. 13, 14, The New York Botanical Garden; pp. 15, 16, 17, O. F. & S. Ltd., London, for Derry and Toms; pp. 18, 19, 20, U.S.D.A.—R. L. Taylor; pp. 22, 23, J. F. Joyner; pp. 24, 25, The New York Botanical Garden; p. 31, Adrien Boutrelle; p. 32, E. N. Mitchell; kodachrome of *Cryptocereus anthonyanus* by Walter Singer.

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THE GARDEN OF TODAY

By **M. E. Bottomley**

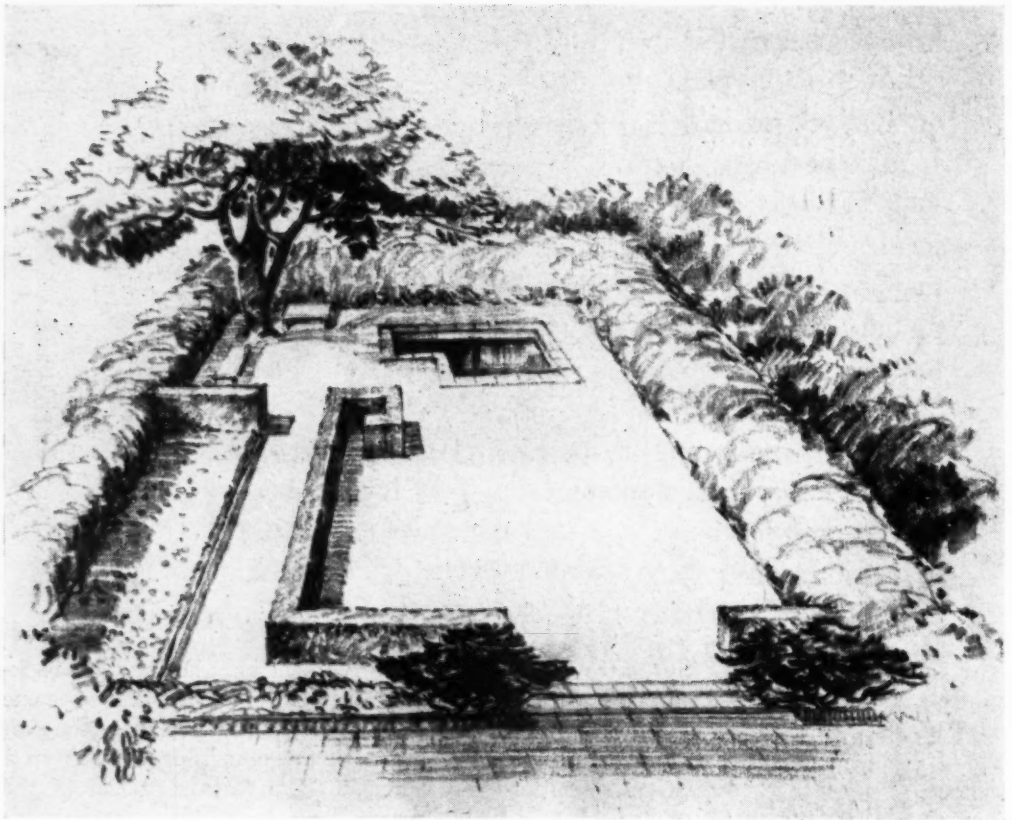
The landscape becomes a part of the house when large window openings, terraces and porches make the interrelation easy. It is a distinction of the modern house that the garden and the living rooms become one, but this advantage entails a responsibility. A garden that is lived in must be presentable at all times, at all seasons. In such a garden, general design plays an ever more important role because design will include the boundary, the lines and masses of inner foliage, the walks, pools, features as well as the placement of the flowers. Such a garden will be effective when "green" and doubly attractive when color is added in the form of flowers and outdoor furniture. In laying out the backyard to accompany the modern house, we begin with framework and add the decoration to this arrangement of lines and areas. The framework will consist of foliage or masonry to form the areas and it is upon the quality of this framework that the permanent effects will depend. The impact of the modern house upon the landscape may be merely to emphasize the importance of the design of garden pictures.

Not only is the American family moving to the suburb, but it is moving into a house planned on one floor, with attached garage and with large window openings. What change will this indicate in the landscape design? The prevailing, one-floor house, either modern or ranch type, is low and usually rather simple. In the front yard, the traditional foundation planting needs modernizing. No longer is it necessary or desirable to cover the entire foundation. All plants should be lower, even the trees. Small or medium-size shrubs replace the old-time favorites — Persian lilac in place of the common lilac, *Deutzia gracilis* instead of the larger deutzia and rhodotypos to replace viburnums. For this reason, short runs of low hedges find place in the modern foundation planting to repeat the horizontal lines of the house, to give neatness and to simplify the whole.

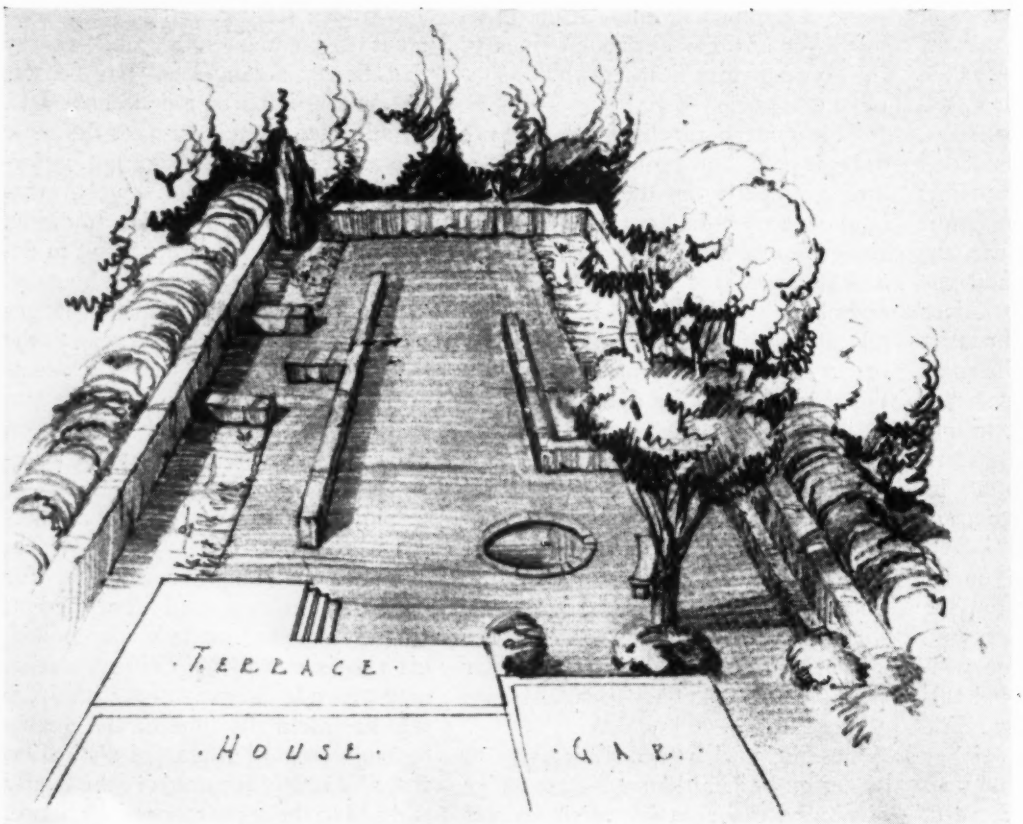
The modern ranch-type house not only is low but broad and takes a larger property. In the backyard the landscape effect is apt to be more spacious because of the absence of garage and by reason of the wider lot. The open lawn will be broad. Plots of land allocated to flowers or vegetables will be cut from the sides rather than from the rear so that the open lawn may extend the entire distance to the back boundary. Again we will search for medium shrubs or plants of horizontal growth, such as Regels privet or *Euonymus alatus compactus,* and may further the horizontal effect by planting a low hedge in front of the boundary shrub line. There may even be space to plant free-standing low hedges away from the side boundary to supply lines of structure.

Yes, the garden of today *is* a garden of design rather than a hodge-podge of flowers, an area in which flowers are prominent but one in which background, form and design have become ever more important. Perhaps the evolution of flower arrangement from a bouquet to an art is typical of the change from the Victorian to the modern in landscape design. Today, both amateur and florist produce artistic flower arrangements as a matter of course. We compare the bunch of flowers stuck in a vase of a generation ago to the studied and beautiful displays so common today and we say that flower arrangement has become one of the important household arts. Would that we could repeat the same evolution in garden design but, unfortunately, garden design by the amateur clings to the Victorian tradition.

Of course, it is more difficult to design a yard than to arrange a bouquet, at least more difficult to make changes and try out ideas. For that reason, the amateur must study seriously examples of garden design in pictures and in plan. He must make layouts on paper to meet his needs and his fancies and then, if not satisfied, he should employ the aid of a professional landscape architect. We pay for style in clothing, for design in interiors, for originality in music and literature but, when the future home owner builds, his ego is enormous. Self-expression may prove to be expensive. Surely, it will be worth the time or the money to evolve a garden plan of distinction that will satisfy the needs of the family and add to the appearance of the house.



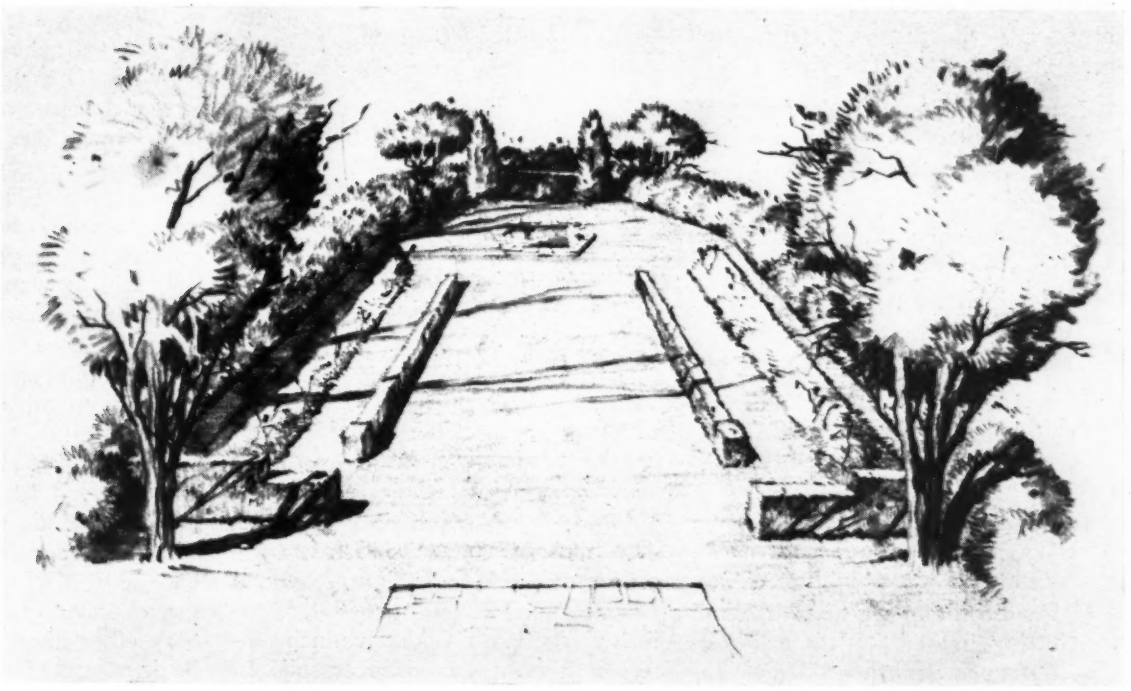
Asymmetry, characteristic of the naturalistic landscape, can be employed in modern landscape design. Here is an interesting example, wherein a clipped hedge on one side, on the opposite side a long border of shrubs, or of flowers, marks the path to the resting point. The pool emphasizes the turn of the open lawn and ties it to the house and benches.



As in the interiors of the modern home, divisions of materials—in this instance hedge, flower beds and lawn — create the variety which is considered the essence of modern design. Here, the pool, flower beds and the lawn are individual features, yet at the same time are united in this "open center" garden.

From the broad windows of a modern house one looks across this garden area which is surprisingly simple, yet strongly effective in design. The foliage ideally frames, but does not dominate the curved hedge, the flower border and the pool.

Formal in plan, symmetrical in elevation, this "backyard" is a modernization of an older garden form. It features the open center with detail along the sides and at the rear, and a boundary that is indispensable for privacy as well as pictorial effect.



Presenting—

MEYER (Z-52) ZOYSIA

By **Fred V. Grau**

Two-inch sod plugs of Meyer (Z-52) zoysia are taken with a special tool. These plugs are set into an existing lawn with the same tool on twelve-inch centers and, with reasonable care, will produce a solid turf in two seasons. Over 100,000 plugs were planted on Washington, D.C. lawns in 1951 with virtually "fool-proof" results.

MEYER (Z-52) zoysia is one of the new, improved, warm-season turf grasses which give hope to the home owner who desperately wants a good lawn free of crabgrass. Developed by the United States Golf Association Green Section and cooperating agencies, primarily with a view toward improving tees and fairways on golf courses, it is eagerly being sought by many other turf enthusiasts. Here are some of the qualities which make Meyer zoysia, next to Merion bluegrass, the most-talked-of turf grass in the country today.

It resists crabgrass and other summer weeds.

It thrives during the heat of summer.

It grows on almost any kind of soil.

It is very drought tolerant, needing less irrigation than most turf grasses.

Turf insects do not seem to affect it.

It is easy to mow when cut regularly.

It needs mowing less often than most turf grasses.

It can be mowed at heights from one-half inch to four inches without loss of vigor and beauty.

It has a wide range of adaptation, having proved its winter-hardiness as far north as Massachusetts, Michigan, and the mountainous regions of Pennsylvania and New York.

It produces a firm, resilient cushion of turf which delights everyone who uses it.

It is very resistant to wear.

It has a pleasing texture and color (about like Kentucky bluegrass) during the growing season.

It is permanent.

As you might have guessed, any grass which has so many good qualities has to have some disadvantages. Here they are:

Meyer zoysia loses its green color in late fall after the first or second killing frost, regaining it in the spring about the time the weather is good enough so that people begin to use their lawns again.

No seed is available so that planting must be done vegetatively, i.e., by plugs of sod or by sprigging. Plug-planting is preferred and the best time to plant is when the ground is not frozen or baked iron-hard by drought. Sprigging is best done from early spring to late summer.

Spread of Meyer zoysia is slow compared to Bermuda but is faster than Manilagrass *(Zoysia matrella)*. Two-inch plugs planted on twelve-inch centers in a lawn should cover solid in two years. Competition from other grasses slows its spread.

Winter weeds come into dormant zoysia turf. These include chickweed, speedwell, henbit, garlic, annual bluegrass, clovers, ground-ivy, and broadleaf weeds. The two most important herbicides for control of these winter weeds are 2,4-D and potassium cyanate. Seeding improved cool-season grasses into Meyer zoysia turf in early fall will go far toward eliminating most winter weeds. To date Merion bluegrass appears to be one of the best of the cool-season grasses to grow in association with Meyer zoysia.

Most people who are enjoying Meyer zoysia feel that the advantages far outweigh the disadvantages. The author and his family are definitely of that opinion from intimate experience on their own lawn, which is gravel and clay subsoil.

Another disadvantage which might be listed is the fact that planting mate-

rial is still limited, with only a few nurseries having planting stock for sale. A list of known suppliers will be furnished by the USGA Green Section to those who inquire and who send an addressed stamped envelope to: USGA Green Section, Plant Industry Station, Beltsville, Maryland.

Meyer zoysia was selected as a promising type by Forbes and Ferguson at the Arlington Turf Gardens in 1940. In 1941, it was brought to Beltsville, where it remained in a 4′ x 4′ plot until 1946. The author and his associates increased Meyer zoysia in the greenhouse during the winter of 1947-48 because, in their estimation, this grass had the best turf potential of any of the strains under observation. In May, 1948, a large nursery was planted with two-inch sod strips laid eight feet apart. These strips met and joined in two growing seasons.

During 1949-50 Dr. M. H. Ferguson, USGA Green Section Agronomist, used this grass in his Ph.D. study, discovering some of the relationships between nutrition and seed setting. Meanwhile, the USGA Green Section and the U. S. Department of Agriculture had furnished planting material to United States Golf Association member clubs and to experiment stations in over half the states. During the winter of 1950 and the summer of 1951, surveys which were conducted jointly by the USGA Green Section and the U. S. Department of Agriculture, showed that Meyer zoysia was one of the turf grasses that many people wanted. The name selected for Z-52 zoysia was Meyer, to honor the memory of Frank N. Meyer, a U. S. Department of Agriculture plant explorer whose body was found in June, 1918, floating on the Yangtze (Yellow) River. Mr. Meyer had collected zoysia seed and other plants for the U. S. Department of Agriculture Plant Exploration Division since 1905.

Meyer zoysia is performing well at such widely scattered locations as New England; Florida; Washington, D. C.; New Jersey; New York; Iowa; Nebraska; St. Louis, Missouri; Kentucky; Denver, Colorado; and California.

Turf lovers throughout the world who will one day come to use Meyer zoysia (or some other truly superior type not yet discovered) may thank the USGA Green Section, the game of golf and all connected with it for the research which has produced a turf grass that approaches *perfection* in many respects. All other turf interests have been enriched by virtue of the private money which the USGA Green Section has spent over a thirty-year period in the search for perfect golf turf. The perfect fairway turf at once becomes the lawn turf for which millions of taxpayers have been striving against horrible odds. Today, there dawns a new era and a new hope for turf lovers, thanks to the USGA Green Section and the U. S. Department of Agriculture, cooperating experiment stations, golf clubs and their superintendents.

For advice on the local performance of Meyer zoysia, or any other improved turf grass, consult your state experiment station first. For a more detailed description of Meyer zoysia, and other superior turf grasses, consult the USGA Journal. The full story of the zoysia grasses will be carried in an early issue of the USGA Journal.

NOTE: Meyer zoysia is only one of several improved turf grasses which has been developed by the United States Golf Association Green Section and cooperating agencies. Commercial firms, cemeteries, landscape contractors, and other turf interests may affiliate with the Green Section and share in these developments, which are supported by private funds. A card or a letter will bring details.—*Editor.*

The plugs are being emptied from the cylinder—it holds twenty-four plugs. The plug cutter at the bottom of the tool is slightly smaller in diameter than the storage cylinder, which allows the plugs to slide freely.

DAVID DOUGLAS

His plant collecting expeditions have enriched the world

By **Dorothy Ebel Hansell**

TALL stately evergreens thickly covered the low bank on one side of the river and the steep sloping bank on the opposite shore. *"Pinus canadensis, Pinus balsamea* and a third species which may prove to be *Pinus taxifolia,"* said David Douglas, pointing out the trees to his friend, John Scouler. Today we know these trees as *Tsuga canadensis,* the hemlock; *Abies balsamea,* the balsam fir; *Pseudotsuga taxifolia (D. Douglasii),* the Douglas-fir.

The two friends, David Douglas, fearless and indefatigable plant collector and explorer, and John Scouler, ship's doctor and an ardent naturalist by avocation, were standing on the deck of the William and Ann, as the ship waited for more favorable weather before attempting to cross the dangerous sandbar at the mouth of the Columbia River. For six weeks, treacherous gales and heavy rains had tossed it about, driving it out to sea again and again and preventing it from entering the river.

Finally, on April 7, 1825, the winds subsided sufficiently to permit the William and Ann to risk crossing the sandbar and to drop anchor in Baker's Bay. Douglas had hardly set foot on solid ground before he was completely absorbed in the wealth of plant material all around him. Little did he realize, as he gazed at the towering pines, that in years to come "the species which may prove to be *Pinus taxifolia"* would become the world's greatest producer of structural timber. He was concerned only with getting on with his mission — to collect trees and shrubs and flowers for the enrichment of Britain's gardens. His emotions that particular morning he aptly recorded in his journal: "The joy of viewing the land, the hope of in a few days ranging through the long wished-for spot and the pleasure of again resuming my wonted employment may be readily calculated."

David Douglas, fearless and indefatigable explorer and plant collector of the early nineteenth century, introduced New World plants to England.

From the time he was a very young boy, David Douglas preferred the great outdoors to school and study. He roamed the fields and woods, collecting plants and birds. The only books that held his interest were tales of adventure. His school days came to an early end at the age of ten in 1809, when his father, John Douglas, a stonemason, decided that since David was not a student, he would be a more useful member of his family as an apprentice in the Sconce Palace Gardens. David took to gardening readily — he loved it. He mastered the rudiments of natural history and botany and by the time he had completed his seven years of apprenticeship, was well versed in the horticultural practices of the times.

In his next post — that of journeyman to Sir Robert Preston — David had the opportunity of getting acquainted with a notable collection of plants and was also given access to Sir Robert's library of botanical books. With his interest in botany stimulated by these contacts, he sought and obtained a position at the botanic garden in Glasgow. There he was favored with the friendship of Stewart Murray, Curator; and through attending his lectures and accompanying him on botanical excursions, he also enjoyed an intimate friendship with William Jackson Hooker, Regius Professor of Botany at Glasgow. Hooker later became Director of Kew Gardens (1841-65) and was made Knight of Hanover.

In the early nineteenth century, when David Douglas was growing into manhood, the Horticultural Society of London (now the Royal Horticultural Society) was active in promoting expeditions to all parts of the world for new and unknown plants. Douglas was engaged in 1823 for an expedition to China. However, as there were native uprisings in that country against the English, the Horticultural Society changed its plans and dispatched him to the United States for the purpose of investigating the latest methods in raising fruits and bringing back new and worthy kinds.

Douglas traveled through the eastern states and into Canada, visiting fruit farms, private gardens and botanic gardens. He became acquainted with America's leading horticulturists and botanists, all of whom were kindly disposed to the youthful English plant explorer. Two horticulturists, one by hobby, the other by calling, were particularly cordial and helpful. The first was Dr. David Hosack, an eminent physician who had been a prime mover in the founding of Bellevue Hospital

and was also largely responsible for the first botanic garden in New York City. That was the Elgin Botanic Garden, located on what is now the site of Rockefeller Center. The other was Thomas Hogg, an Englishman who had then only recently established a nursery at the corner of 23rd Street and Broadway. It was Hogg who introduced Douglas to Grant Thorburn, the first seed merchant in New York City, and to members of the New York Horticultural Society. It was Hogg who accompanied him on his journey to Pennsylvania where they visited, among other places, the flourishing nursery of David Landreth. Douglas obtained many trees, ornamental as well as fruit, and roses from this nursery for shipment to England. Douglas also met, while in Philadelphia, Thomas Nuttall, who took him to John Bartram's botanic garden on the Schuylkill River and to the small but interesting garden connected with the University of Pennsylvania.

Only one unpleasant incident marred Douglas' first visit to America and that was his unfortunate experience with William Prince, the proprietor of a nursery at Flushing, L. I. Early one August morning, Douglas paid a visit to the "beautiful Fulton Market." He was impressed with the display of vegetables and fruits, including a great supply of pineapples and coconuts from the West Indies and a "fine head of *Musa sapientum* weighing forty pounds." Then he headed for the Linnean Botanic Garden of Wm. Prince & Son. Perhaps the contrast between the attractive market and the untidy nursery where most of the ground was covered with weeds, was the initial disappointment. Next, while he found "some good specimens of *Magnolia*, of *Berberis aquifolium*, a few European plants, common shrubs and herbs," the extensive catalog had led him to expect much more of the Prince establishment. But the real provocation was, without doubt, the exhorbitant prices Prince demanded for the plants Douglas wanted to ship to England.

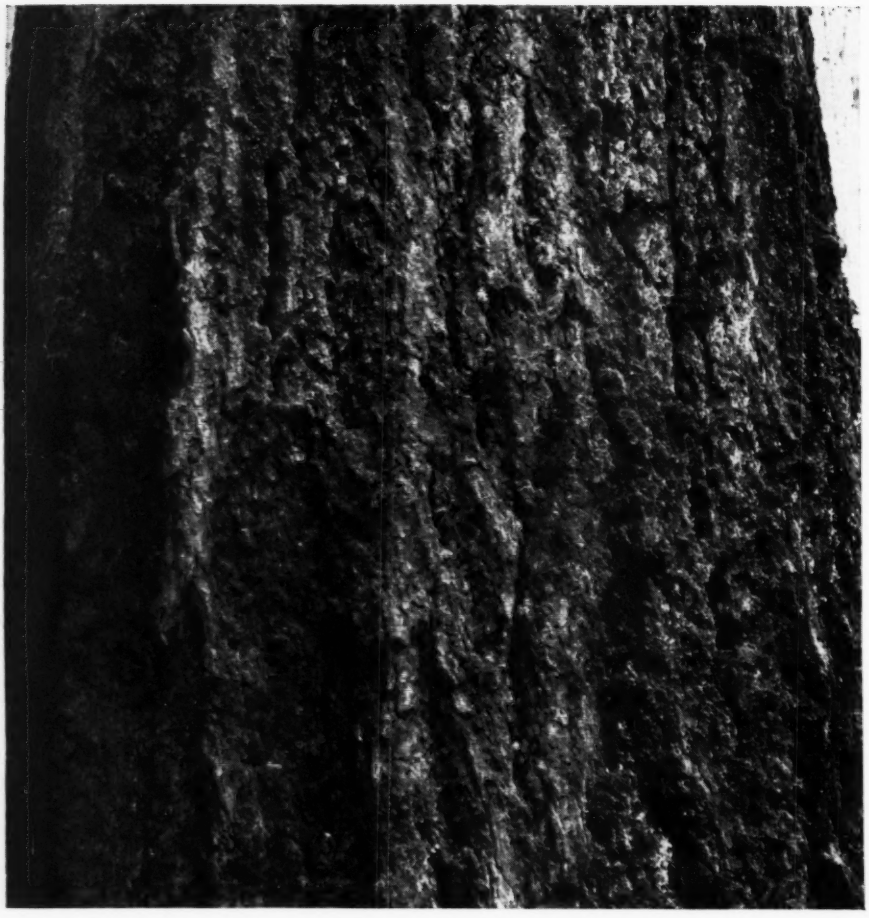
While traveling through New York State and into Canada, studying fruits during the months of September and October, David Douglas called on Stephen van Rensaleer, who was then the wealthiest man in the United States. Rensaleer had an extensive garden and fine orchards and hothouses. His friends in continental Europe supplied him with many kinds of grapes: "Black Prince, Hamburgh, White Sweet Water, Grizzley Frontignan and Malmsey. No attention is paid to the native vines of North America."

Douglas also reported that Rensaleer had a "large pleasure and flower garden, which is a novelty in America, as little attention is paid to anything but what brings money or luxury to the table." The daughters were responsible for the order and good taste in which the flower garden was maintained; it contained roses from France, herbaceous plants from Germany, and annuals from London.

Another interesting entry in his journal refers to the New York farm and garden of Jesse Bull, a friend of Governor Clinton, which was divided by hedges of *Crataegus oxyacantha* from Britain. Hedging in America was still "a thing unknown in a general sense."

Douglas presented a comprehensive report to the Horticultural Society of London about his trip to eastern America and brought back a very gratifying number of cultivated trees and plants, including fruits. He was lionized by London Society; but not being a person of social background, all the entertaining soon wearied and bored him and he became restless and petulant. His irritability was further emphasized by concern that no berth as a curator in a public botanic garden or institution was open to him, due to his lack of scientific education. Fortunately, there was a growing demand for the plants which Archibald Menzies, surgeon naturalist, had observed

The Douglas-fir is a handsome ornamental tree for the home grounds.



This close-up shows the furrowed bark of Douglas-fir. The photograph was taken in a typical old growth forest in the state of Washington.

on his trip in the Pacific northwest in 1788-90 and Lewis & Clark on their expedition along the Columbia River. So Douglas was sent on a second mission, this time to northwestern America, under the protection of the Hudson's Bay Company.

The good ship William and Ann set sail with Douglas on board from Gravesend, England, on July 26, 1824, and on Feb. 12, 1825, came in sight of a river on the northwest coast of the American continent. In that lapse of time it had traveled around Cape Horn, stopping enroute at several ports — Madeira in August, Rio de Janeiro in September, from which Douglas sent home orchidaceous and bulbous plants, Juan Fernandez in November — and finally, as was mentioned at the beginning of this story, it anchored in Baker's Bay on April 7, 1825.

The natural scenery made a tremendous impression on Douglas, so much more magnificent, he wrote, than that of his native homeland. He described the wealth of plant material in detail and the habitats in which he found them. From the first glimpse of the "remarkably tall, unusually straight tree, having the pyramidal form peculiar to the Abies tribe of Pines," he had "every reason to hope that it is in every respect well calculated to endure our climate and that it will prove a beautiful acquisition to English sylva, if not an important addition to the number of useful timbers." Douglas' most sanguine hopes have been fully realized.

Actually, Archibald Menzies found and recorded the tree when he accompanied Captain Vancouver's expedition in 1794 and Dr. A. B. Lambert named it *Pinus taxifolia.* But it remained for Douglas, after considerable difficulty and tedious searching, to collect and send seeds of the tree back to England and thus introduce it into cultivation. Eventually, extensive plantations were developed abroad, for the tree grows more rapidly than any evergreen native to Europe. It has become a valuable ornamental tree because of its symmetry and the density and color of its foliage and is employed for windbreaks and shelter areas. It has also, in the one hundred and twenty-odd years since Douglas sent seeds back to England, developed into a very valuable commercial tree, for it attains magnificent proportions — a height of two hundred feet or more with a clean shaft for one third of the height. Also, it is the strongest wood for its height — a fact which the Indians recognized long years ago, for they preferred it to all other wood for their bows. Early explorers and settlers used this wood for the mast and spars of their ships. In our day, because of its remarkable strength and lightness, Douglas-fir is considered the ideal structural wood for home and factories, for freight ships, railroad ties and telephone and telegraph poles. It is also used for finishing purposes — for example, for doors and panels — because, when properly sawn, the wood has a beautiful grain and, either natural or stained, the surface is attractive. Within the past fifteen years, plywood has been produced from this tree in prodigious quantities by gluing together veneer sheets on the outside and sheets of lower grade lumber on the inside. So a tremendous industry has resulted from David Douglas' interest in a beautiful tree on the bank of the Columbia River. The sawtimberstand of Douglas-fir in the United States is five hundred billion feet; the annual cut of timber from Douglas-fir in this country is nine billion feet.

Several other pines excited Douglas' interest. In searching for cones of the sugar pine *(Pinus Lambertiana)* along the Multnomah River in southern Oregon, he experienced one of the most adventurous and hazardous of his many trips into wild and unexplored country. Douglas was the first to record this pine and he named it in honor of his friend, Dr. A. B. Lambert, a well-known botanist of the early nineteenth century. The sugar pine has not been widely used as an ornamental tree, though occasional specimens may be seen in the British Isles and here and there in eastern and western United States. However,

it is grown commercially in California and Oregon, where it ranks in volume with redwood and ponderosa pine.

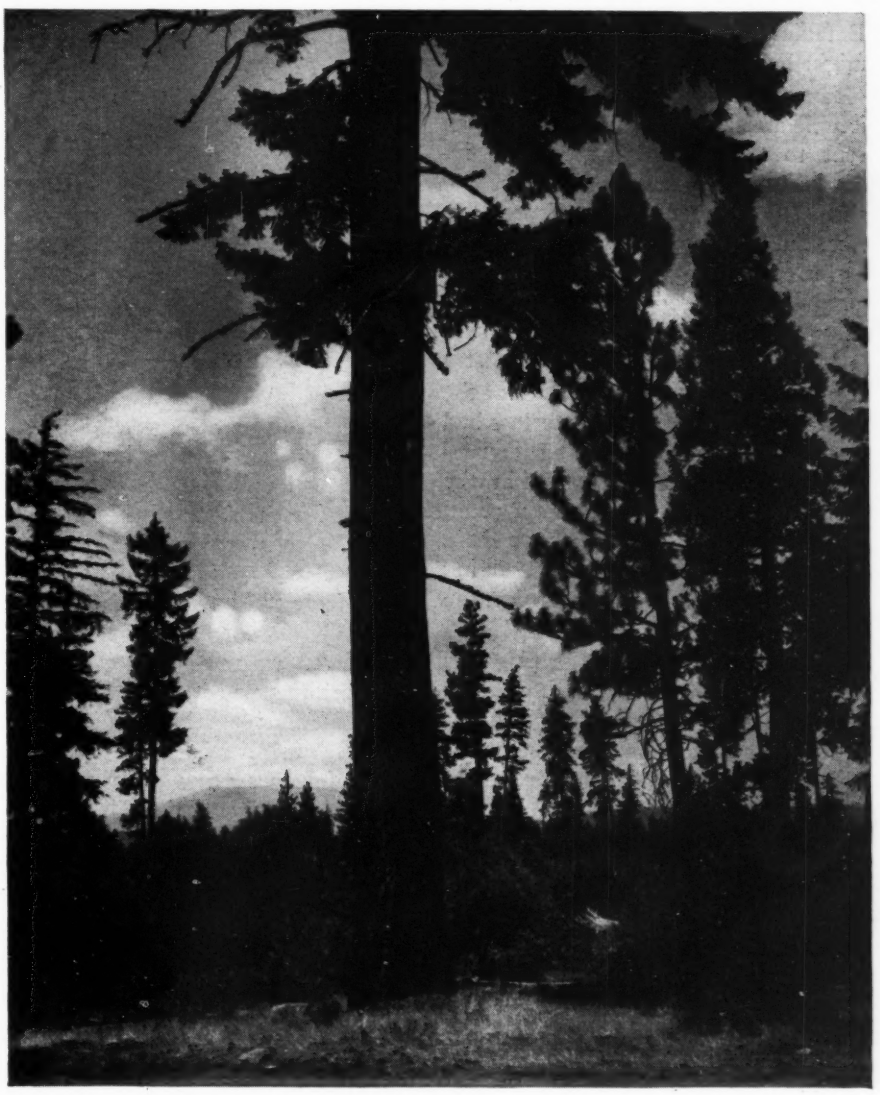
The latter is another of the trees which Douglas brought out of our Pacific northwest. The Lewis & Clark expedition reported it a little more than twenty years before Douglas saw it growing along the Spokane River, The [illegible] was he who collected and sent seeds to England and suggested the specific name, *ponderosa*. This, too, has great commercial value as a timber producing tree, its hard fine-grained wood being used for interior finish in homes and other buildings, for boxes and crates; it is not strong enough, however, for heavy construction.

Collecting seeds of trees did not absorb David Douglas to the exclusion of all else. He sent back seeds of numerous shrubs and perennials native to the western American continent and then unknown to English botanists and gardeners. It has been said that one shrub alone, the red currant, *Ribes sanguineum*, proved to be worth more than the expense of the entire expedition, a sum less than four hundred pounds. In fact, Douglas has been given credit for introducing more plants into British gardens — and plants able to live without winter protection — than any other individual. An unknown admirer, writing in "Gardeners' Chronicle," 1926, stated: "There is scarcely a spot deserving the name of a garden either in Europe or the United States in which some of the discoveries of Douglas do not form the chief attraction. To no single individual is modern horticulture more indebted."

Douglas did not accomplish his mission in a matter of days or weeks — it was almost two years from the day he landed near the mouth of the Columbia River until he left by the Hudson's Bay Express on the long homeward trek. Those two years tested his mettle. At first he lived in a deerskin tent, later a hut of cedar bark. When he left the Columbia and Willamette River areas and explored deep in the wilderness, he slept on the ground — with no protection from rain, snow or wild animals. For weeks, months even, he never saw another human being. A good part of the time he suffered from exposure and lack of food — there were days when he had nothing to eat but berries or the roots of plants; but hunger, fatigue, and sickness did not daunt his zeal in plant collecting. Rains hampered his efforts and also destroyed his specimens, but still he persisted.

On his return to England honors were conferred upon him — he was made a member of the Linnean Society, fellow of the Zoological Society of London, and of the Geological Society. But before long, the novelty of being entertained palled and again Douglas was restless to be off on another expedition — this time to California, for his contacts with Menzies had aroused his interest in the flora of that part of the American continent. After some delay, the Horticultural Society of London arranged, with the financial assistance of the Colonial office and Hudson's Bay Company, for him to explore west of the Rockies from California northward. During the eighteen months he spent in that territory, he discovered a number of new species of pines and other trees, shrubs and plants. The latter included several mariposa lilies, evening primroses, penstemons, lupines and *Nemophila insigne*. The last has long been a popular garden annual.

Douglas undertook several other expeditions — a third trip to the Columbia River area; a trek far into Canada, from which he hoped to reach the Russian settlements—but that particular trip was disastrous; and a voyage to Hawaii. It was there that he met his tragic and untimely death at the early age of thirty-six.



Douglas-fir grows in southern Oregon only in a mixed forest.

AN HERBARIUM IN ACTION

By David D. Keck

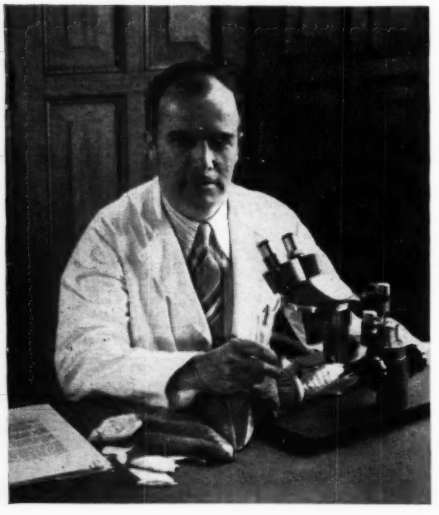
THE visitor introduced himself as an officer of the U. S. Customs Service. He took from his briefcase a dull green, woven table mat manufactured in Japan and placed it on the desk.

"We would like to have one of your botanists tell us what this mat is made of. We have tentatively identified the material as grass stems, but as in some respects it doesn't look like grass, they had me bring it out to The New York Botanical Garden so that you people might help us."

Examination showed that this serviceable article, part of a large shipment sent to the United States, was indeed made very largely of the finely shredded straw of a grass, probably rice, but that in addition it contained a small percentage of the tough marginal fibers of a sedge, added undoubtedly to serve as a strengthener. These ungrass-like yellow shreds had cast a doubt on the first determination at the customs house, which nevertheless had been essentially correct. The government agents were interested in the correct verdict so that they could assign the proper rate of duty on these articles. The rate differs depending upon the kind of materials used in the manufacture of such goods.

We see officers from the Customs Service fairly often in the Herbarium at the Garden. They ordinarily bring us questions of this sort, some of which may test our knowledge of plants to the fullest.

Again, our visitor may be a local police officer anxious to learn for sure whether the plant in hand is actually marijuana, as a whole vacant lot covered with it has been spotted, and the extermination squad has already been called into action. The plant is marijuana, all right, and the officer shows his appreciation by bringing us several fine specimens of it for the Herbarium a half hour later.



Dr. Keck, Head Curator of The New York Botanical Garden, is pictured in his office, as he examines a magnolia through the microscope.

And now, the request may be from a manufacturer of railway dining cars whose decorators are putting the finishing touches on some interiors that depict the Far West, and he must have illustrative material of the sagebrush and the coast redwood. For such a purpose we are able to supply specimens from the Herbarium that fill his need.

A Broadway producer calls on the Herbarium staff to pass on the authenticity of the plant life in his tropical stage sets. An artist must know what kind of leaves grow on certain oaks in California, as he is painting them without having seen them! A news magazine editor phones to ask whether his war correspondent is correct in referring to the "scrub oaks" on the Korean battlefront. Such questions are samples of the scores that have been answered in recent months.

As a public service, we try to answer such questions as best we can. After all, we are largely a public institution. And sleuthing after obscure plant identifications that may help solve a crime or mystery, often on the basis of fragmentary evidence, is a stimulating challenge. Also, jobs such as this can be attempted here, in one of the half dozen largest herbaria in the world, better than elsewhere. Fortunately, the Library, too, at The New York Botanical Garden is exceptionally complete, and an adequate botanical library is an indispensable accompaniment to an herbarium.

An herbarium is like a huge card file to the plant resources of the world. If one must know what the parts of a plant look like, how large its flowers and fruits are, where it grows, when it blooms, and the answers to dozens of other questions, he can expect to find them in an herbarium.

But answering questions about plants for public and private agencies, for corporations, publications, courts of law, designers, drug houses, and all the rest, is a secondary activity with the hustling Herbarium staff of The New York Botanical Garden. The maintenance of a collection of over 2,500,000 specimens is in itself a task of no small proportions. Additions at the rate of several hundred a week must be inserted into their proper places in the collection. It is only after these have been thus filed that they can be made readily available to specialists who need to consult them.

During the first ten months of 1951, in response to their requests, we have sent out on a loan to specialists, not only of this country but throughout the world, fifteen thousand mounted herbarium specimens, a figure far larger than that of any comparable institution. These borrowed materials are used in revisional and monographic studies that bring up to date

or extend our knowledge of the classification and distribution of plants. After a recognized authority has studied a collection, affixed his determinations and comments on the material, and published a report thereon, these specimens are enhanced in value, as they become reference points for the work of future students. Consequently, The New York Botanical Garden is glad to have its collections in such wide demand for this type of work.

A principal function of our own staff members is to make similar additions to human knowledge. For that purpose, they not only study the permanent collections housed at the Garden, but also borrow material from other herbaria that are known to be rich in their special groups. Scientific journals and other publications receive a continual stream of taxonomic papers as a result of this work.

Some members of the staff concentrate on making identifications of the innumerable collections that are sent to the Garden. Others are engaged in writing regional floras that will serve the public as guides to all the higher plants that grow in certain geographic areas. All are already, or are well on the way to being, world authorities on more circumscribed groups of plants. Their studies on herbarium materials are supplemented wherever possible by field explorations that give them a first-hand knowledge of the living plants of their special interests.

The staff at the Garden has placed special emphasis upon the floras of the United States and of northeastern South America. Almost all parts of the United States have received special study at the Garden, the emphasis at the moment focusing on the floras of the Great Basin and California. The project in northeastern South America has been a natural extension of the intensive study of the Caribbean area carried on at the Garden almost since its inception.

The bold explorations of Dr. Bassett Maguire and his associates in the Guayana Highlands of southern Venezuela, British Guiana and Surinam, which have now entered their fourth season since 1944, to date have brought to the Garden some twenty-five thousand specimens of extremely desirable plants from this little known region. Many are duplicates to be distributed as exchanges with other botanical institutions.

Other programs bring in materials similarly to be identified, labelled and incorporated here or sent elsewhere in part. At the present time the Herbarium staff is in the process of distributing a magnificent collection of some twelve thousand specimens made by Dr. L. J. Brass on the Vernay Nyasaland Expedition of 1946, jointly sponsored by The American Museum of Natural History and The New York Botanical Garden. A much larger collection from Ecuador, doubtless the most comprehensive yet made of that country and totalling some thirty thousand specimens, was made by Dr. W. H. Camp, then a member of the Garden's staff, when searching for new sources of quinine during World War II. Part of his collection is now ready for distribution. The collection of the material itself is only the first step. Since, in the case of such tropical floras, different plant groups must be sent to specialists around the world for accurate determination, the assembling of all the information necessary before a collection of this size can be moved is often a formidable task. At least a dozen smaller collections await similar handling.

The Herbarium of The New York Botanical Garden has been built up through collections by the staff, exchanges, gifts and purchases. At its inception it was given a valuable foundation on which to build by the deposit here of the herbarium of Columbia College. This included the historically invaluable personal herbarium of Dr. John Torrey and was otherwise representative. In recent years other schools have likewise transferred their herbaria to the Garden on a deposit basis. Thus, there are now to be found at the Garden the large herbarium of the College of Pharmacy, built up

(Continued on page 26)

Frank C. MacKeever, Custodian of the Herbarium, removes a specimen from the shelves of one of the new steel cabinets.

The Founding of

THE NEW YORK BOTANICAL GARDEN

By **William J. Robbins**

THE founding of The New York Botanical Garden may be considered to have occurred sixty years ago, when the Legislature of the State of New York passed an act incorporating the institution. In that act, there were listed forty-eight public-spirited citizens of New York City who constituted "a body corporate by the name of The New York Botanical Garden, to be located in the City of New York, for the purpose of establishing and maintaining a botanical garden and museum and arboretum therein and elsewhere within or without the State of New York, for the collection and culture of plants, flowers, shrubs and trees, the advancement of botanical science and knowledge and the prosecution of original researches therein and in kindred subjects, for affording instruction in the same, for the prosecution and exhibition of ornamental and decorative horticulture and gardening, and for the entertainment, recreation, and instruction of the people."

Citizens of New York City listed in the Act of Incorporation of The New York Botanical Garden

Seth Low	Eugene Kelly, Jr.	David Lydig
Charles P. Daly	Richard T. Auchmuty	William E. Dodge
John S. Newberry	D. O. Mills	James A. Scrymser
Charles A. Dana	Charles F. Chandler	Samuel Sloan
Addison Brown	Louis Fitzgerald	William H. Robertson
Parke Godwin	Theodore W. Myers	Stephen P. Nash
Henry C. Potter	Wm. C. Schermerhorn	Richard W. Gilder
Charles Butler	Oswald Ottendorfer	Thomas Hogg
Hugh J. Grant	Albert Gallup	Nelson Smith
Edward Cooper	Timothy F. Allen	Samuel W. Fairchild
Cornelius Vanderbilt	Henry R. Hoyt	Robert Maclay
Nathaniel L. Britton	William G. Choate	William H. S. Wood
Morris K. Jesup	William H. Draper	George M. Olcott
J. Pierpont Morgan	John S. Kennedy	Charles F. Cox
Andrew Carnegie	Jesse Seligman	James R. Pitcher
Thomas F. Gilroy	William L. Brown	Percy R. Pyne

Those public-spirited citizens may properly be regarded as the founders of The New York Botanical Garden and their names are preserved on a bronze plaque attached to the wall adjacent to the door leading to the Founders' Room.

Although, like Abou ben Adhem, the forty-eight listed may lead all the rest, there were many others intimately concerned with the founding of this institution and equally responsible for its establishment. This becomes clear from the history of The New York Botanical Garden.

The immediate stimulus for the founding of The New York Botanical Garden was the Royal Botanic Gardens at Kew, England. Dr. Nathaniel Lord Britton, then Professor of Botany in Columbia College, and Mrs. Britton went to Kew in 1888 to study collections made by Dr. H. H. Rusby in Bolivia in 1885 and 1886. There was no adequate herbarium material in this country, and in order to study Rusby's collections properly it was necessary for Britton to go to Kew. Both Dr. and Mrs. Britton were impressed by the beauty and the value of Kew and returned to the United States with the idea of establishing a similar institution in New York.

Previous attempts had been made to establish a botanical garden in New York City. Dr. David Hosack, also a Professor of Botany at Columbia College, had, at his own expense, founded the Elgin or Hosack Garden in 1801, the first public botanical garden in the United States. This was located where Rockefeller Center now stands. By 1811, Dr. Hosack found the garden more than his private means could maintain; it was sold to the State of New York, given to Columbia College, and disappeared as a botanical garden. Later, in 1877, an abortive attempt was made to establish a botanical garden adjacent to Central Park. Dr. and Mrs. Britton were more successful in their attempt.

The need for a botanical garden in the City of New York was considered by the Torrey Botanical Club at its meeting October 24, 1888, at which Mrs. Britton described to the club the Royal Botanic Gardens at Kew. At the next meeting of the club, a committee was appointed to consider the subject further. This committee consisted of E. E. Sterns, Chairman; Arthur Hollick, Secretary; Thomas Hogg, H. H. Rusby, T. F. Allen, Nathaniel Lord Britton, J. S. Newberry and Addison Brown.

E. E. STERNS: (1846-1926) I know very little about E. E. Sterns. He was born at Jamestown, New York, and died at the age of eighty at Helmuth, New York. I believe he may have been an amateur botanist of note.

ARTHUR HOLLICK: (1857-1933) later became Curator of Paleobotany at The New York Botanical Garden, a position he held until his death.

THOMAS HOGG: (1820-1897) was born in London, England, and came to this country with his father, Thomas, and brother, James. The father was a horticulturist — *Coreopsis grandiflora* was named by him— and he developed a nursery business

in New York. The son Thomas, our Thomas, was appointed U. S. Marshall by President Lincoln and served eight years in Japan. In 1873, he returned to Japan in the service of the Japanese government, where he remained for two years. During this period he introduced *Cornus Kousa.*

H. H. RUSBY: (1855-1940) was a noted plant collector who became Dean of the College of Pharmacy and Curator of Economic Botany at The New York Botanical Garden.

TIMOTHY F. ALLEN: (1837-1902) was Dean of the Homeopathic Medical College of New York.

NATHANIEL LORD BRITTON: (1859-1934) was Professor of Botany at Columbia College.

J. S. NEWBERRY: (1822-1892) was originally trained as a physician. However, he became interested in geology and was eventually appointed Professor of Geology, Botany and Paleontology at Columbia. He was one of the distinguished group of men invited by President Lincoln to become the organizing members of the National Academy of Sciences.

ADDISON BROWN: (1830-1913) was Judge of the U. S. District Court and later collaborated with Dr. Britton in the preparation and publication of Britton and Brown's ILLUSTRATED FLORA OF THE NORTHEASTERN UNITED STATES. It is said that he read proof of this publication during his final illness.

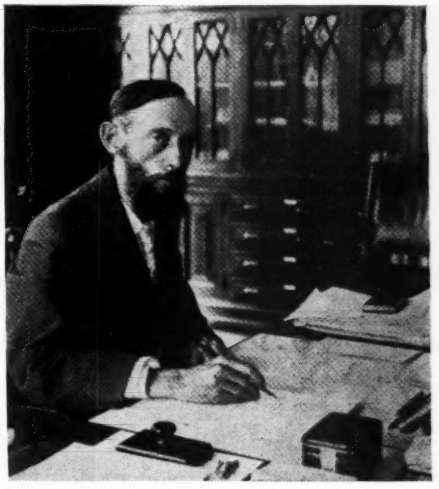
As you can see, this committee was a very distinguished and able group, varied in background but united by a common interest in plants.

At a meeting of the Torrey Botanical Club held January 8, 1889, an appeal for a public botanical garden was presented by the Committee, was adopted and ordered printed for general circulation. The appeal opened by saying:

"The accumulation of wealth and the growth of public spirit in this metropolis make it reasonably certain that we shall have, sooner or later, a public botanic garden of the highest class. Strictly speaking, a garden of this sort is a scientific and educational institution, quite as much so as a library or a college, and for its foundation and maintenance the public may properly look to the sources from which so many of our universities and

Mrs. Nathaniel Lord Britton

Dr. Nathaniel Lord Britton, first Director of The New York Botanical Garden.



libraries have been derived. A garden such as New York City ought to have would fully equal in value such distinguished institutions as Cornell University, Vassar College, or the Astor and Lenox Libraries."

The appeal goes on to say: "The uses of a botanic garden may be reckoned as of four sorts. First and foremost is the purely scientific and educational use. Subsidiary to this, but still of a marked degree of importance, are the pharmaceutical and horticultural uses, and lastly, the general use as a place of agreeable resort for the public at large."

It was pointed out that two American institutions of a kindred nature, the Shaw Garden at St. Louis and the Arnold Arboretum in Massachusetts, were already "in successful operation, honorably perpetuating the names of their respective originators and benefiting at once the student and the general public."

This appeal was supplemented by a small pamphlet entitled, "The Need of a Botanical Garden in New York," which was published by the Torrey Club Committee. This pamphlet pointed out that "the Torrey Botanical Club, which has many lady members, appeals to their fellow citizens of both sexes to take steps to make among us in this great city a home for the flowers, and trees and products of all nations."

An article published in the "American Art Journal," February 23, 1889, entitled, "A Million-Dollar Garden," includes a sketch of an elaborate gate for the entrance to the Garden, refers to the Garden as "a people's garden," and appeals for subscriptions. With this article, there are included quotations from the Tribune, Times, Sun, Boston Transcript, Telegram, Evening Sun, Ex-Mayor Hewitt, C. A. Dana, George William Curtis and Charles Pratt, all warmly supporting the idea of establishing a garden in New York City.

In addition, Julian Hawthorne wrote in "Lippincott's Magazine" in January 1891, an article on, "An American Kew," which describes the gardens at Kew in delightful fashion, emphasizes the importance of botanical gardens, refers to the Hosack Garden, and ends by suggesting that unless New York took speedy action, Philadelphia, Chicago, San Francisco or Boston might "cut in before us."

The original committee appointed by the Torrey Botanical Club was reorganized in part because of the illness of its chairman, E. E. Sterns and in part probably to add "lady members" of whom there were many in the Torrey Botanical Club. Thomas Hogg was appointed the new chairman and Mrs. Charles P. Daly, Mrs. Lena Potter Cowdin and Mrs. Louis Fitzgerald were added. (The Torrey Club Committee which signed the pamphlet on "The Need for a Botanical Garden in New York" included also the name of C. F. Cox.)

An act to provide for the establishment of a garden, drawn by Judge Daly and Judge Addison Brown, was

introduced into the Legislature on March 6, 1891, and became law by the approval of Governor Hill. The Act of Incorporation authorized the Commissioners of Public Parks to set apart two hundred fifty acres in Bronx Park, if a fund of not less than $250,000 could be obtained by the incorporators by subscription. It required four years to fulfill this condition.

At a meeting held May 19, 1891, at the residence of Mrs. C. P. Daly, a committee of women was appointed to act with the founders to obtain subscriptions to the $250,000. This committee consisted of Mrs. C. P. Daly, Mrs. Samuel Sloan, Mrs. Muhlenberg Bailey, Miss Ann Livingston, Mrs. Harrison, Mrs. Morris K. Jesup, Mrs. Seth Low, Mrs. Arthur Brooks, Mrs. William G. Choate, Mrs. Winthrop Cowdin, Mrs. Prescott Hall Butler, Mrs. Edward Fiedler, Mrs. Edward Lauterbach and Mrs. Joel Wolfe.

Judge Daly addressed the group. His remarks were printed under the title, "Want of a Botanical Garden in New York. . . . Remarks of Ex-Chief Justice Charles P. Daly, at a meeting held on May 19, 1891, to take action under the law enacted by the legislature for the establishment of a botanical garden in the City of New York." Judge Daly pointed out that, "the necessity of a botanical garden in the City of New York may be presented from two points of view: 1—Its scientific importance and utility for the development, improvement and preservation of the vegetable kingdom, and 2—Its value as a place of recreation and instruction for all classes of the people, and especially for the working classes, who have little leisure for recreation, and whose means do not admit of their indulging in much expense."

Judge Daly terminated his remarks with the question, What is the use of flowers? — and answered it by quoting some lines from Mary Howitt:

"Our outward life requires them not,
Why, therefore, had they birth—
To minister delight to man
And beautify the earth?
To comfort man, to whisper hope
Whene'er his faith is dim,
For who so careth for the flowers
Will care much more for Him."

By June 18, 1895, the sum of $250,000 required by the Act of Incorporation had been fully subscribed. The subscribers included Columbia College, J. Pierpont Morgan, Andrew Carnegie, Cornelius Vanderbilt, John D. Rockefeller, D. O. Mills, Addison Brown, William E. Dodge, James A. Scrymser, William C. Schermerhorn, Charles P. Daly, Oswald Ottendorfer, Samuel Sloan, George J. Gould, Helen M. Gould, John S. Kennedy, William Rockefeller, Arnold Constable & Co., Morris K. Jesup, Mrs. Melissa P. Dodge, Tiffany & Co., and Hugh N. Camp.

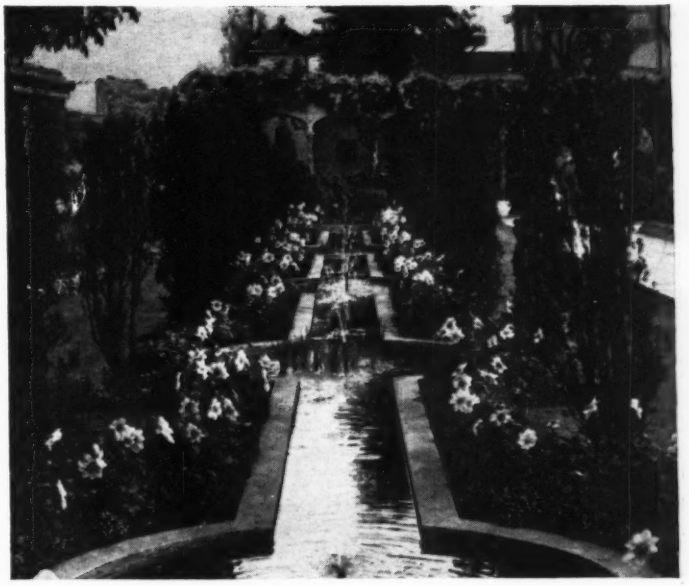
The Commissioners of Public Parks set aside two hundred fifty acres of land in Bronx Park for the use of the botanical garden and the Board of Estimate and Apportionment appropriated $500,000 in special bonds on July 19, 1897, for the erection of buildings. The first city appropriation for annual maintenance was made in 1899. The first grading was done in the spring of 1896, ground was broken for the Museum Building on December 31, 1897, the planting of the herbaceous grounds was commenced in April 1897. The main conservatory was commenced in May 1901 and completed in 1902, but by 1895 The New York Botanical Garden was a going concern with Cornelius Vanderbilt as President of the Board of Managers; Andrew Carnegie, Vice President; J. Pierpont Morgan, Treasurer; and Charles F. Cox, Charles P. Daly, William E. Dodge, John I. Kane, Darius O. Mills, James A. Scrymser, Samuel Sloan, Nathaniel Lord Britton, Addison Brown, Charles F. Chandler, James F. Kemp, Robert Maclay, Seth Low, Lucien M. Underwood, William L. Strong and S. V. R.

(Continued on page 27)

Members of the Torrey Botanical Club on the steps of the Museum and Administration Building of The New York Botanical Garden on June 27, 1900.

The HANGING GARDENS of KENSINGTON

By **T. H. Everett**



The Court of Fountains in the Spanish Garden.

EVERY American visiting London, England, whether particularly interested in gardening or not, should go to Derry and Toms' Department Store. There, a hundred feet above busy High Street in the Royal Borough of Kensington, is one of the most remarkable gardens in the world. I visited it last summer. Unless I had done so, I would find it difficult to believe that such a perfect roof garden existed. Conceived with magnificent inspiration, executed with supreme artistry, and maintained with amazing skill, this is one of the wonders of horticultural England.

The garden covers almost one and a half acres. But such a statement is meaningless. As one wanders from Spanish garden to Tudor garden, past pools, waterfalls, rock gardens, streams, spacious lawns, and gay flower beds, one is psychologically affected by the cunning of the layout — this garden covers many acres. It is miles from busy London. Here one is in another world — in Kipling's realm that is "full of stately views, of borders, beds and shrubberies, and lawns and avenues." Here is English gardening at its best.

I entered the 'lift" at Derry and Toms on an afternoon in late July — and was soon whisked the modest hundred feet or so to the roof. Miss Guy, who serves as hostess, welcomed me, told me of her charge, and invited me to view it leisurely. I did so.

From the beginning it was evident that here was something different. I was in the Spanish garden with its lovely Court of Fountains, its Moorish pergola, its beautiful wrought iron balconies and gates and its authentic mission bell. Colorful paths, tile-edged pool and flower beds, tiled roofs and brightly colored walls spoke of sunny Spain. The mild sunshine that filtered through London's sky that day seemed warmer and more intense in these surroundings.

A sub-tropical character was imparted by noble specimens of fan-leaved palms, healthy yuccas, figs, and grapes. The borders of mixed flowers — heleniums, hydrangeas, dahlias, anchusas, gladioluses, roses, stocks, violas and false dragonhead — surely could not be excelled and probably could not be equalled in many places outside Britain. Strips of greensward contained these borders. The formal fountain-studded canal that gives name to the Court of Fountains is set in a panel of fine green lawn. It lies between two rows of strict Irish yews sensibly substituted for the more tender Italian cypresses. Borders along either side of the canal were gay with brilliant scarlet and white geraniums. Comfortable wicker chairs appropriately located were well patronized. Here in London a little piece of a Mediterranean land, with English

A corner of the Spanish Gardens.

The archways
in the Tudor Garden.

housewives and their offspring enjoying it. At least one overseas visitor enjoyed it, too. Thousands of others have and will.

From Spain one steps to Tudor England. Garden walls of warm red brick and broad-topped archways dominate the architecture. Courtyards paved with brick and flagstones with creeping plants between were brightened by beds of geraniums and white alyssum so unbelievably fine that they inevitably brought to mind the perfection of flower show exhibits. Here, too, were fuchsias and rambler roses trained in tree form and all abloom. Stone urns frothed over, some with fuchsias and trailing lobelias, some with pink-flowered ivy-leaved geraniums. English lavender, hollyhocks, pinks, stonecrops and rudbeckias luxuriated in raised borders fronted by low walls of mellowed stone. Behind them gorgeous purple, white and pink-flowered clematises and other vines decorated the courtyard walls. Blue lily-of-the-Nile in tubs and in fat bud lent charm to steps that led from one court to another. Conveniently located were inviting seats of weathered wood — seats that reminded me of old church pews.

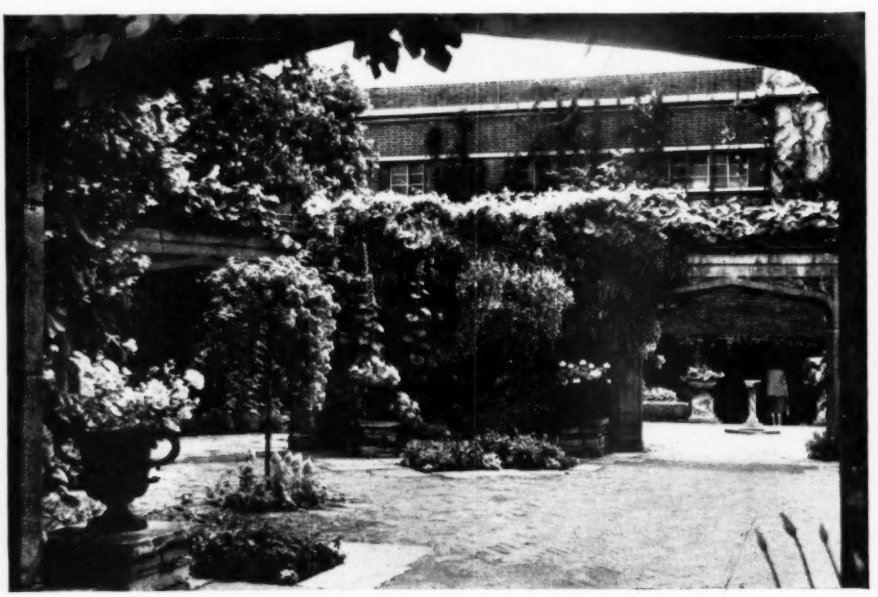
I turned into a long and narrow path and was alone. A tall brick wall clothed with Virginia creeper and other clinging greens crowded my right, to my left was a great planting of rhododendrons and other shrubs. A high canopy of horse-chestnut screened the sky, underneath was a ground-cover of ferns and other woodland plants. It was dampish; the light was soft and pleasant. It was a place that monks might favor for their holy meditations. Tudor England — there was dignity, charm and a sense of calm too often lacking in its modern counterpart. I was thankful to be taken back for a while, however briefly.

Lured by the sound of running water I made my way to the Woodland Garden. That such a development could flourish here was completely unbelievable. Trees fully thirty feet high, with trunks eight inches and more in diameter, were as well established as in their native homes. Plantings of choice woodlanders beside a stream that cascaded convincingly along its rocky bed scarce seemed the work of man. Nature, apparently, had taken over completely; the art of the gardener was fully concealed.

An Old English Garden with a stone bridge spanning a stream attracted my attention. What can I say about it, other than tell of the good taste with which it is designed and the expertness with which it is maintained? It is no temporary exhibit. Like all parts of this roof garden it wears an air of permanence. It is an air honestly attained, for Derry and Toms' Roof Garden was established in 1938.

And so on to the typically English Garden that fronts the imposing Sun Pavilion where visitors linger over their afternoon cups of tea. A terrace in front of the pavilion, beds aglow with snapdragons and other summer flowers, tall trees and shrubbery and spacious lawns, lent charm to this picture, illustrated on the front cover. Ducks and doves lazed on the greensward.

A brick wall background detracted somewhat from the rock garden, but plants will, perhaps, eventually conceal this and then the outcrops of weather-worn limestone planted with alpines and other choice plants and the charming waterfall will be seen at their best.



A courtyard
in the Tudor Garden.

The Sun Pavilion where visitors enjoy afternoon tea.

I was back almost to my starting point. I contemplated the roofscape and reflected upon all I had seen. Most astonishing was the large size and magnificence of the trees which were here in great numbers and considerable variety. They included elms, white birches, chestnuts, horse-chestnuts, flowering cherries, laburnums, hawthorns, apples (in full fruit), peaches and medlars. One of the medlars is the only known descendant of a tree which grew in the garden of William Makepeace Thackeray, when he lived in Young Street in royal Kensington. The fig trees growing on this roof are lineal descendents of one that grew in Whitehall Gardens and under which Nell Gwyn consorted with King Charles II. A hundred-year-old yew tree, by no means unique in a land where old gardens are common, was yet an unexpected find upon a city roof.

I had seen the gardens. Now, obviously, I must meet the gardener and whoever had the inspired vision to make this sanctuary possible. Miss Guy introduced me to J. Tarvin, the head gardener, and told me where I might find Trevor Bowen, who initiated the garden and who actively directs it. New surprises were in store!

Mr. Tarvin proved to be a professional of the old school, a gardener skilled in his craft and possessed of a wealth of experience and knowledge gained in fine English gardens. He spoke thoughtfully and with authority and was justifiably proud of his work.

He told me that the average depth of the soil on the roof is eighteen inches and that this rests on a twelve-inch layer of drainage. The roof itself is specially constructed to bear the enormous weight it does. The soil now there is that which was hauled in more than thirteen years ago. Its nutrients and organic matter are replenished as necessary by the addition of cow manure, peat and fertilizers. More fertilizing is needed than in down-on-earth gardens, because frequent watering leaches solubles more quickly. And frequent watering is necessary; the ground is soaked daily during the summer months. The water used comes from three artesian wells sunk to a depth of six hundred feet beneath the building. It is aerated in tanks on a neighboring roof before it is applied to the plants.

Mr. Tarvin explained that practically all the trees, shrubs and vines had been in place since the opening of the garden and that the perennials in the borders were cultivated, lifted, divided and replanted from time to time and the lawns were tended just as in more conventionally located gardens. He added that some fifteen thousand bulbs and about thirty-eight thousand bedding plants were set out each year. "From where do you obtain these?" I asked. "The bulbs are purchased but the bedding plants are raised here on the roof," he replied. I hoped that my look of astonishment did not betray the inward doubt I felt. "Would you like to see the greenhouse and nursery?" continued Mr. Tarvin. Eagerly I accepted the invitation. I followed him through a weatherbeaten door in an old brick wall to that most delightful part of all true gardens — the propagating area. I was again reminded of Kipling "And where the old thick laurels grow along the thin red wall, you'll find the tool and potting sheds which are the heart of all." Here was a greenhouse, electrically heated, and frames, and yard space,

(Continued on page 26)

The bridge and stream in the Old English Garden.

The conifer collection in the U. S. National Arboretum is distinguished in its good planting of the lace bark pine, *Pinus Bungeana*.

Concerning the—

U. S. NATIONAL ARBORETUM

By B. Y. Morrison

In attempting to write of the U. S. National Arboretum, we must begin by saying that in its basic organization it does not differ from any other since there is implicit in the word arboretum the fundamental concept of a collection of woody plants. We are concerned, therefore, in establishing here as great a collection of trees and shrubs as can be grown out of doors in our climate and under the conditions of our site.

In this last we are fortunate, since within our four hundred-odd acres there is not only a diversified terrain with a wide variety of exposures, but many of the types of soils commonly found in the metropolitan area. In addition, there are many acres of indigenous mixed woods with small inclusions of pine woods as well.

Purchase of land began in 1928 and has continued at intervals with what appears to be the final acquisition in 1951. Many of the parcels were quite small but now that all are brought together and enough time has passed that the original boundaries are obliterated, one has not only the feeling of unity but, thanks to the terrain, of remoteness from the city itself.

During the early years, when annual appropriations allowed for little development work, progress was made with the help of the Civilian Conservation Camp and its workers. During that period it was possible to do most of the rough work of clearing old fence rows, removing various undesirable buildings, working over the woodlands, draining several marshy areas not needed in the design, creating a system of work roads to all parts of the area for fire fighting, and initiating soil improvement programs by the use of summer and winter green manure crops. At that time also there were started the first nurseries, stocked with plants from the then Division of Botany and a little later from the Division of Plant Exploration and Introduction. After the merger of these two divisions in 1934, there were even greater cooperative projects. During these years Dr. Frederick V. Coville was the Acting Director and O. M. Freeman his officer active on the ground. To Mr. Freeman in particular, the Arboretum owes much.

The whole area, which is roughly the shape of a trapezoid with its long boundaries on the north and south, might be described by saying that there is a high point near the western boundary, a broad somewhat diagonal level central plain variously traversed by minor cuts, valleys and one stream, and a long high ridge along the eastern boundary that slopes quickly to the valley of the Anacostia River, a valley now incorporated in the Anacostia Parkway of the metropolitan park system. The two high areas are wooded, the central area broken by woods that follow the low levels.

In examining the area in relation to the city, it became evident that the entrance for the general public wishing to visit the growing collections might best be located on the south boundary, the center for scientific work involving herbarium, library, lecture and administration building at the northwest corner where public

transportation facilities are available, and the service center on the northern boundary which is contiguous with other business agencies.

The studies preliminary to designing led us to the decision that within the limits of space we should plan our plantings in two categories, those that would provide groupings of plants in spectacular arrangements to be supplemented later by the other plantings that would lead up to taxonomic completeness. It has not been possible or desirable to follow this consistently, as at times we collected a taxonomic group before any display "for effect" could be arranged. We set ourselves the further limitation that our "effects" should be worked out with plants that would be not only at their optimum here but characteristic of our area and southward, rather than in imitation of collections elsewhere.

Working under such plans, it has not always been possible to develop units contiguous to one another and so for the balance of the area the general treatment has been for open woodland or meadow lands of the rough open character typical here, in order to conserve as many man work hours as possible.

At this writing the Arboretum is not open to the general public, but would-be visitors who telephone are always received during the working week. During the azalea season, usually from mid-April to mid-May, the Arboretum is opened on Saturdays and Sundays so that anyone may visit it to study the landscape effects. Students desiring to work in the herbarium will find that is housed at present in the North Building at the Plant Industry Station at Beltsville, Maryland. How soon it will be possible to provide the guards and the facilities necessary in places generally open to the public is likely to depend upon national circumstances.

At this time there is little to urge upon the student visitor other than the taxonomist. The garden visitor will doubtless be interested in seeing the large azalea planting and its subsidiary Clonal Garden now in construction, the Three Valley Planting accomplished through a gift from The Garden Club of America, the Dogwood Garden similarly made possible by The Woman's National Farm and Garden Association, the beginnings of the conifer collection distinguished, perhaps, in its good plantings of the lace bark pine *(Pinus Bungeana)*, of the dawn sequoia *(Metasequoia glyptostroboides)*, of the young forest of white pine *(P. strobus)*, the interesting association of the holly and magnolia collections, in which the plants of *Magnolia macrophylla* are conspicuous and the plants of *Ilex pedunculosa* always call forth comment, as do the variants of the Chinese holly, *Ilex cornuta*. Although it is not conspicuous now, there is an excellent young plant of *Magnolia Veitchii* that we hope one day will be a major attraction.

Visitors to the Garden Club of America planting, a unit planned for autumn effects, are first struck with the beauty of the cryptomerias and the various species of true cedar, but as they walk down the trails they find the collection of *Camellia sasanqua* with flowers from late September to frost; in October bloom on the still young plants of *Camellia oleifera;* in September sheets of bloom of *Lycoris radiata* and later of *Sternbergia lutea,* neither a woody plant but a fine undercover for the shrubs.

Although there is a good initial planting of flowering crabapples, the

Visitors to the Garden Club of America planting in the arboretum are struck with the beauty of *Cryptomeria japonica*.

Magnolia macrophylla is conspicuous in the large and interesting collection of magnolias.

Ilex pedunculosa draws favorable comment from visitors to the U. S. National Arboretum.

collection will be made outstanding by the generous gifts of members of the American Association of Nurserymen. Below them in the grass will be many more narcissi than those now in place.

The major project now under study is the planting in a centrally located spot of the collection of trees and shrubs that will be arranged for landscape effects, but in such a fashion that they may be studied as an outline of the Plant Kingdom, starting with a collection of the bamboos hardy for our area, and ending probably with the less showy but undeniably hardy composite, *Baccharis halimifolia*. The only major concessions to the landscape architect in this study will be the repetition of various conifers to insure a unity of color composition in winter and the choice of the showiest possible members of each order and genus. In all cases, the plant groups are planned so that one need not be forever conscious of labels.

No one is more aware than the writer of the inequalities of the present areas of development nor of how many years must pass before most of the plantings take on some semblance of maturity. No one hopes more fervently than he for the day when it will be possible to maintain all portions with equal care, nor when the student who needs library, herbarium and laboratory will find them all here with a good staff who can help him in his work, as well as prepare its own studies that will be based upon data from a region not now well known in horticultural histories either for its beauties or its possibilities.

How to Look a Seed Catalogue in the Eye

There was once a very wise man, versed in such matters, who said (Scupoli was his name, Laurence Scupoli) that some temptations we should flee from as from the plague and others that we should stand up to and look squarely in the eye. In the latter category fall those annual garden temptations, the seed catalogues.

Last year I vowed I would be stern about it. I promised myself that I would stand up like a man, square my shoulders and stare that temptation of seed catalogues out of countenance. . . . Well, the catalogues arrived. I read them. I braced my shoulders. I looked them in the eye. Then I winked.

From THE GARDENER'S DAY BOOK
by RICHARDSON WRIGHT

GLAMOROUS TRAVELERS from the HOME GREENHOUSE

By Sophia Naumburg

FORTUNATE is the owner of a small greenhouse on the home grounds. With its help, he can create a glamorous atmosphere by bringing in to the home beautiful plant specimens appropriate to the particular season. Between special occasions, he can always have healthy, attractive plants, for the greenhouse provides better growing conditions than does the average home. Gardening under glass is helpful in controlling humidity, temperature and pests. Fertilizing also can be accomplished quickly and easily. Even plant propagation succeeds there with a fraction of the attention and effort required elsewhere.

In early October, the season starts for my glamorous travelers, when all of the potted plants are brought in from their protected outdoor summer location. They are then divided into two groups — house plants and greenhouse plants.

Enduring foliage plants, including ferns and ivy, dracaena and dieffenbachia, nephthytis and aglaonema, form the permanent background indoors against which the sparkling, transient plant color is placed.

The first to lend exotic charm to the window garden is a red anthurium *(A. Andraeanum)* which has lived, and bloomed for me for many years. It is a true color standby, as it is rarely out of bloom. A leaf, root and flower come from each node. It seldom stays indoors for more than a month at a time, as it must have the cool humid air and bright light of the greenhouse.

Its place is taken by Cape bulbs or valthemia. Stalks of pink flowers arise annually from the heart of a dormant bulb in the beginning of November. The glossy green leaves, wavy on their edges, are interesting and unusual. The white calla *(Zantedeschia)* soon adds its sophisticated foliage and cool whiteness to the floral picture.

Thanksgiving means chrysanthemums to almost everyone. At that time the place of honor in the window garden is filled with Indiana Market, late white incurved; Gloria, clear yellow incurved; and Bronze Frick, copper bronze, incurved.

The indoor grouping is truly magnificent at Yule-tide. Several pots of white poinsettias in full bloom are placed around a very old grafted Christmas cactus which drips with pink flowers. Nestled in the foreground are pots of *Kalanchoe Blossfeldiana,* whose scarlet flowers are indeed in keeping with the season. Dainty, forced freesias add their pristine whiteness and delicate scent, and thus complete the festive setting.

Pots of Christmas Pepper *(Capsicum frutescens)* and Jerusalem-Cherry *(Solanum Pseudo-Capsicum)* are given strategic places to greet guests on Christmas day. Immediately after the guests have departed, the plants are whisked back to the cool greenhouse.

The strong vibrant color of the holiday transient plants is soon replaced by the softer and more delicate airiness of the fairy primrose *(Primula malacoides)* and several pots of astilbe, the latter having been taken from a coldframe and forced to yield their pink loveliness months ahead of their scheduled appearance. Amaryllis *(Hippeastrum vittatum)* adds strong and sturdy foliage and flowers at this time. Our well-fed bulbs go on producing beautiful flowers year after year — most beautiful and highly prized of all is our Royal Dutch pure white hybrid.

The begonias are now coming into their full glory — rex and rhizomatous. They, too, are placed in the window garden so their dainty offerings can be better enjoyed.

The scene shifts when spring and Easter arrive. The azaleas and forced hardy Dutch bulbs appear. None of the previous visitors from the greenhouse has been quite as thrilling, for they herald the coming outdoor season. They are truly the prophets. Theirs is the hope eternal.

Mrs. Naumberg gives her young son Allen a lesson in watering the plants in her greenhouse.

A Palm for the Household — NEANTHE BELLA

By **J. Frank Joyner** *and* **Edward O. Gangstad**

THERE are few plants whose natural environment has made them well suited for general household use. And even those best adapted have certain limitations to the irregularities and vicissitudes of the average household routine. The palm is frequently used in the home, but there are relatively few palms which are adapted for growth indoors.

The Kentia palm *(Howea Forsteriana* Becc.) is, perhaps, the most commonly used indoors. This tree-palm, originally obtained from Lord Howe Island off the southeast coast of Australia, is, however, rather large for the common household. While its growth may be limited to five to ten feet in height indoors, under proper conditions outdoors it will attain a height of fifteen to twenty feet. More recently, *Neanthe elegans* O. F. Cook *(Collinia elegans* Liebm.*)* has appeared on the market in limited quantities as a household palm. It, too, is somewhat large for the average household, growing five to seven feet in height, but is very beautiful and can be satisfactorily grown in hotels, restaurants or large homes where space is available. In the early stages of growth, both of these palms may, of course, be grown as small potted plants in the average home.

The late Dr. O. F. Cook of the United States Department of Agriculture observed, in 1902, a beautiful diminutive tree-palm growing in the shade of the mountain forests of eastern Guatemala, in the district of Alta Vera Paz. Plants of this Mayaland species, brought to Maryland by Dr. Cook, were found to have a high tolerance to shade and drought and thrived excellently in his stove-heated country home.

Details of the physiology, culture and genetics of this palm were published by Cook and Joyner in the "National Horticultural Magazine," January, 1938, and the "Journal of Heredity," March, 1939. To date, the palm has not had wide acceptance as a household plant, possibly because most nurserymen have failed to obtain a set of seed and because few plants have been imported.

The plant is dioecious but the male and female flowers are easily confused, because they are similar in shape and because the male flower has an enlarged pistilode in the center which makes it appear as the female flower. The stamens and anthers of the male flower are not apparent, except by removing the corolla or by cutting open the flower.

It is also possible to determine the sex of a plant from the dead inflorescence, long after the flowers have shed, because the male inflorescence is considerably larger than the female and because the flower buds are about twice as far apart in the female as in the male. With a little practice, one does not need more than one plant to determine the sex by this method.

Once the floral structure is understood, there should be little difficulty to obtain seed by hand pollination, except to have a sufficient number of male and female plants flowering at the same time. A single inflorescence, if carefully fertilized, may bear one hundred to one hundred fifty fruits. These are dark green and attain mature size of about one-quarter inch in diameter in three to four weeks, but take nearly a year to ripen. As the fruits reach maturity, the peduncle, axis and branches of the inflorescence turn deep orange color and the fruits eventually turn black.

The seeds are hard and albuminous and slow to germinate. Under the average home conditions, three to six months are required, and some lots of seed have taken twelve to fifteen months to germinate. They may be sown at any time of the year in a suitable potting soil in an ordinary con-

Double potted *Neanthe bella*, about three years old. Moss or peat packed around the inside pot insures better moisture conditions. Plants grown thus need not be watered more than once or twice weekly.

Female plant with several fertilized inflorescences. The fruits are black when ripe and about one quarter of an inch in diameter.

tainer. They should be sown on the surface of the soil and covered with a layer of sand about one inch thick to prevent crusting and to reduce surface growth of fungus. The soil should be kept damp but should not be allowed to become "water-logged."

In *Neanthe bella* the first two leaves are reduced to two short cylindrical sheaths that turn green after emergence. The young plants live upon the digesting endosperm and roots do not form until the third or true leaf begins to develop. It is compound; when fully expanded it usually has eight pinnae. Other leaves follow about four to six weeks apart, but as with many tropical plants, it may enter a "resting stage" of several weeks to several months at most any time in its development. The particular conditions of growth are, therefore, very important for full natural development. A double pot with a covering of sphagnum moss around the outside of the inner pot has been found useful in maintaining favorable moisture conditions.

The neanthe is somewhat unusual among the palms because it will flower and fruit under household conditions. It has been observed, however, that insufficient watering retards the development of the leaves and may completely suppress the development of the inflorescence. The plant may survive under a reduced water supply but there is a narrowing, shortening and thickening of the pinnae. If the reduction in growth is not too severe, normal growth is resumed when the palm is properly watered.

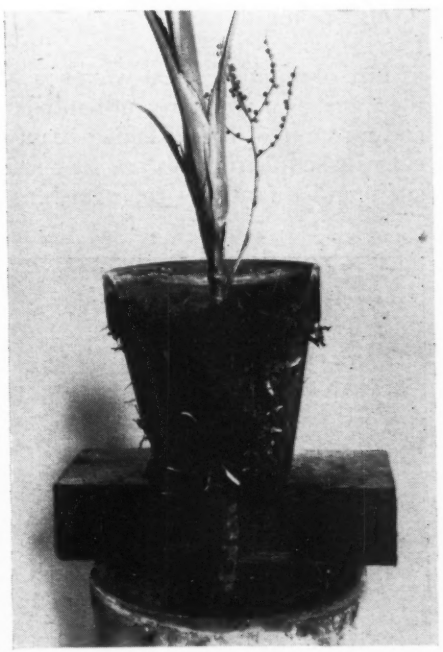
Arid conditions of the home may also seriously affect the plant. If soil moisture is adequate, growth will be quite normal, but the tips of the pinnae will "die back." Such conditions are often obtained in a heated room during the winter season of a northern climate. In mild cases the pinnae usually die-back about one-half inch but under prolonged dryness, they may die-back as much as two to three inches.

Neanthe bella is also sensitive to excessive light. In its natural habitat, it grows without exposure to direct sunlight. If the light is very intense, the pinnae become light green or yellow and eventually die. The plant will do best in a protected corner with a moderate exposure to indirect light.

Neanthe bella is a long-lived perennial — some of the original plants obtained by Dr. Cook are still living. As they become old, however, the sucessive development of leaves gives the plant a spindly unsightly appearance. This situation can easily be remedied by cutting around the trunk at the desired level and binding a soil pot over the exposed area. Roots are readily formed at the nodes and the basal portion of the plant may be removed and the plant repotted. This ability to root at the node is a characteristic of the neanthe.

When studied in detail, *Neanthe bella* is found to be a very unusual palm. The name, *Neanthe,* was used by Dr. Cook to describe the youthful flowering habit of the species. The successive juvenile leaf-forms of the plant are suppressed and "character" leaves develop in the young plant. It is also distinct in that it is a true tree-palm in miniature. Most other dwarf palms are lacking in trunk, flowing crown or natural pinnae of the tree-palm.

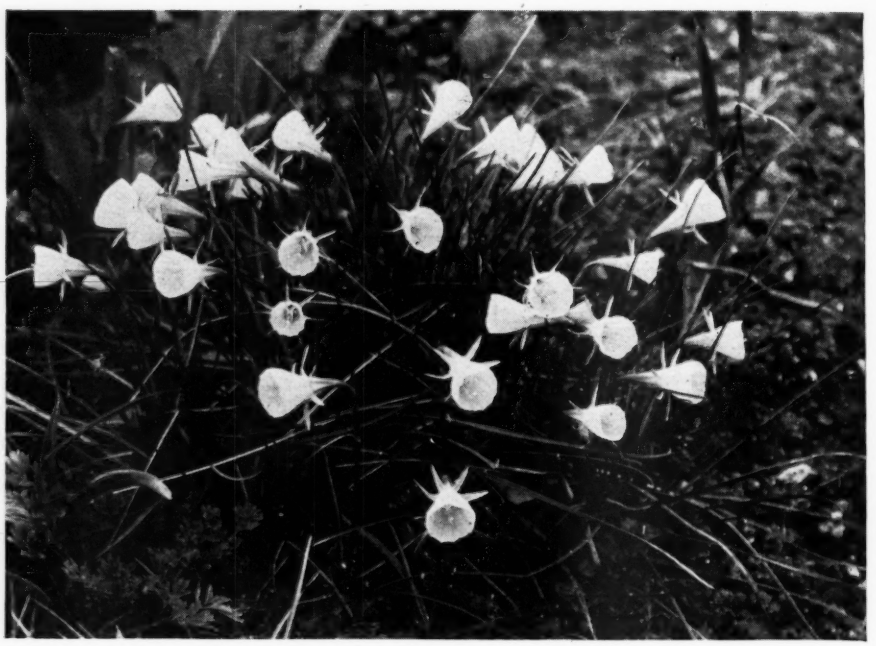
The genus *Neanthe,* as described by Cook, contained three species: *Neanthe bella; N. elegans* which is about three times as large as *N. bella* and has a three-angled pistilode; and *N. neesiana,* which is somewhat larger than *N. elegans* and has a cylindric pistilode. Although these species are all closely related, various attempts to make interspecific crosses have not been successful. Empty parthenocarps are obtained when *Neanthe bella* pollen is applied to the stigmas of *Neanthe elegans,* but the reason why the embryo does not develop has not yet been determined.



Male plant on which a soil pot has been bound to cause the development of roots at the upper nodes. When these roots have developed, the basal portion may be removed and the plant repotted. To keep plants from becoming tall and spindly, it would be necessary to do this once every ten to fifteen years.

"Little Bulbs"

By **Charles H. Mueller**



The hoop-petticoat daffodil is among the earliest of the spring bulbs.

THE so-called "little bulbs," for all their diminutive size, compose an extensive kingdom, one whose domains are all too lightly explored by most gardeners. First there are those, such as grape-hyacinths, snowdrops and squills, often catalogued as "miscellaneous bulbs." Then there are small species of bulbs, such as tulips and daffodils, whose larger forms are more familiar.

There are many varied uses for the little bulbs, almost as many, perhaps, as the kinds of bulbs themselves. The most frequent use is as early spring curtain raisers. Thus, we often see lawns sprinkled with crocuses or a few snowdrops tucked here and there as furtive reminders that winter is on the wane. A more powerful reminder, and a source of breath-taking beauty, comes when these bulbs are set out in sufficient quantities to form large shoals or drifts, bringing bright color to an otherwise barren landscape.

Snowdrops, or galanthus, are the earliest bulbs to be planted in small colonies or large sweeps for naturalistic effect. Opening at the first let-up of winter, their green-tipped, white bells are a refreshing sight in late February or March. If you grow a few snowdrops as harbingers of spring, try planting them in large patches in wooded or open sections. Set the bulbs two to three inches apart under three inches of soil and let them colonize. Snowdrops are inexpensive and easy to plant; with the aid of a sharp, narrow trowel you can easily plant three to five hundred an hour. *Galanthus nivalis* thrive well in shade, *elwesi* like to ripen in the sun.

Chionodoxa, or glory-of-the-snow, and eranthis, or winter aconite, are other early bulbs suitable for mass plantings. The pale blue stars of chionodoxa follow on the heels of the snowdrops. They can be drifted under trees, in open meadow, around rock outcroppings. *Chinodoxa luciliae* is light blue, *sardensis* a deeper blue, both with white centers, *gigantea* a uniform lilac. Winter aconite has a buttercup-like blossom of soft yellow. It grows well on the south side of a high-branching tree where it gets winter sun but some summer shade.

The little known species crocuses also should be grown for very early spring charm. *Sieberi,* a lilac-blue, and *etruscus,* a lavender, are very early. *Susianus* is a deep yellow, while *chrysanthus* E. A. Bowles and E. P. Bowles are new varieties of pale yellow. The species crocuses have smaller blossoms and are more wind-blown than their cousins, the later-blooming "Dutch" crocuses. The latter, however, provide spectacular splashes of color when planted as lavishly as they should be. There is no more memorable feature of early April than the

The flowers of this tulip species, *Turkestanica,* appear in late March.

sight of five hundred dark violet *purpurea grandiflora* opening at the foot of a large maple or elm.

The squills and grape-hyacinths of April will also give you repeated spring pleasure when naturalized in large drifts. *Scilla sibirica* Spring Beauty, the newest squill, which sends up two to three seven-inch spikes of intensely deep blue, is particularly effective when drifted beneath white birches or pines. The gray-blue "striped squill," *Puschkinia scilloides,* is attractive in similar locations. *Muscari armeniacum,* the best deep blue grape-hyacinth, can be colonized for annual spring beauty in open sun or light shade. For an appealing color combination, mass it in front of late forsythias.

In considering feature plantings of "little bulbs" for May, we think first of wood hyacinths, or *Scilla campanulata.* These doughty bulbs, whose ten to fifteen-inch spikes of loosely hung bells flourish in full sun or almost complete shade, are now available in a wide range of colors. The older variety, Excelsior, a blue-lilac, is still excellent for naturalizing. Among the newer campanulatas Rosabella is a fine light pink, Rheinlander a distinctive deep blue, and L'Immaculee a robust white. Also, for May, the camassia should not be overlooked. Hardly "little" in size, since it produces two-foot spikes of deep blue, starry bells, it is all too little in usage by the average gardener. *Leichtlini* is the best camassia species. It thrives in moist woodland, where it will provide a center of interest in late May after daffodils have ceased blooming.

Not all little bulbs bloom in the spring. Autumn crocuses, planted in sweeps and drifts, yield as much landscape beauty at the end of the garden season as their spring relatives do at the beginning. They flower in sun or shade but should not be planted where a heavy fall of leaves will hide their blooms. The crocus-like, but much larger colchicums should be planted for impressive effect either among widely spaced groundcover plants such as *Vinca minor,* or in drifts in front of rhododendrons. Autumn crocuses and colchicums are available in lavenders, blues, violets and white. The yellow among fall crocus-like flowers is furnished by *Sternbergia lutea.* It likes a southern slope away from north winter winds, where its golden cups can open each autumn above its dark green foliage spears.

Another desirable early fall flower is the wild cyclamen, *Cyclamen neapolitanum.* This pale pink flower has attractive ivy-like foliage which follows the blossom in the fall and shows again in early spring. It colonizes readily in light shade in soil that is not too acid.

All "little" bulbs are at home, too, in the rock garden where small plants hold sway. Picture, if you can, this type of garden without any small scillas or species tulips and narcissi peeping out in the spring. All of the early bloomers — snowdrops, chionodoxas, winter aconites, species crocuses — be-

The starry blue flowers of *Camassia leichtlini* are pleasing in a woodland garden.

long in the rock garden or bank, either in sunny or partially shady pockets. The fall-flowering colchicums, crocuses and sternbergias likewise flourish here.

Some of the earliest bulbs there are, narcissus species, like nothing better than to bake their foliage after blooming in full sunshine. Little *minimus* has a perfect miniature golden trumpet carried on a three-inch stem. *N. triandrus albus,* or angel's tears, has pointed petals sharply reflexed from its tiny white cup. The hoop-petticoat daffodil *(N. bulbocodium)* has a bell-shaped cup with narrow perianth petals streaming out behind. In late April or May, Simplex, the single sweet jonquil, lends fragrance to the garden air.

Better known among the "little bulbs" than narcissus species are the species tulips. From the March-flowering *Tulipa kaufmanniana,* or waterlily tulip, to the May-flowering *clusiana,* or candystick tulip, there are many tulip species ideally suited for rock garden or bank plantings. The long list of *kaufmanniana* hybrids covers a wide range of blooming time and color. The red and gold Cesar Franck and the deep red Scarlet Ele-

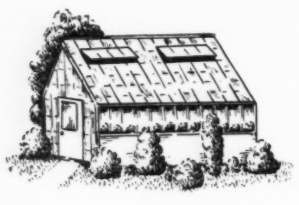
***Sternbergia lutea* opens its golden-yellow cups in autumn.**

gance open early. The soft rose-pink Fritz Kreisler and the chartreuse-yellow Sweelinck are midseason bloomers. The warm rose, edged primrose, Handel flowers in late April.

The huge, blazing scarlet *Tulipa fosteriana* hybrid, Red Emperor, is fairly well known. It should be planted wherever large bold blooms can be shown to good advantage. Two smaller species, which should be in every rock garden, are *turkestanica* and *dasystemon*. *Turkestanica* in late March bears six to eight florets, white inside and cinnamon-brown outside, on a six-inch stem. *Dasystemon,* blooming in late April, is also cluster-flowering. Its five-inch stem, bearing three to five florets, rises above long, undulating leaves which fan out star-shaped along the ground. The flowers, gleaming white with yellow centers, are also star-shaped with long pointed petals.

A final, but indispensable use for "little bulbs" is in companionship with what are thought of as "major" bulbs. Thus, the very early light blue *Muscari azureum* (really *Hyacinthus azureus*) makes an excellent border for early-flowered "regular" hyacinths. Perhaps the most colorful combination in our New Hope, Pennsylvania, garden is a planting of vivid *Tulipa kaufmanniana* Scarlet Elegance rising above a blue sea of *Scilla siberica* Spring Beauty. The grape-hyacinth, *Muscari armeniacum,* is a perfect foil for either white or yellow daffodils. You will also find it an effective border for Triumph tulips of all colors.

There is no better way to round out the spring bulb season than to plant *Scilla campanulata* in companionship with the tall May-flowering tulips. With rose and pink Darwins, such as George H. Dicks or Caroline Testout, you will find the deep blue wood hyacinth, Blue Ribbon, makes a perfect combination. For a perfect end to the tulip show, plant the white scilla l'Immaculee with such red and white late tulips as Darwins Eclipse and Annie Speelman, along with groups of *Phlox divaricata.*



HANGING GARDENS **(from page 17)**

and flats, and pots, and earth, and the good smell that belongs with places where potting and planting are done. Mr. Tarvin conceded that sometimes he is a little cramped for room, but that is the plaint of every greenhouse operator.

As we left the nursery yard a glint of yellow high on a wall caught my eye. It was a chance seedling of an American goldenrod which had established itself in debris gathered on a jutting ledge. Quite uncared for, it flowered bravely in this alien clime. My thoughts returned me to New York's Westchester County and to her glorious hillsides that soon would be turned to gold by flowers of this same kind. Strange how small a circumstance can take the wanderer home!

We left the nursery, Mr. Tarvin and I, and strolled through the gardens. He told me that he has three gardener assistants employed steadily. He said that visitors did little damage but asked a lot of questions. Some even thought that the tree roots are conducted in pipes through the building to the earth beneath. Birds nest and raise their young in the gardens, the fishes in the streams and pools multiply. "What about insects?" I asked. Mr. Tarvin sadly admitted that these too make their homes and propagate their kinds, unless he wages active warfare against them. Aphids and slugs are the worst pests.

We were in the Spanish Garden again. Above the wall I caught sight of the tall church spire of nearby St. Mary Abbots. It rises to a height of two hundred and seventy-eight feet and is the highest church spire in London, the third highest in England. Although the present edifice dates but from 1872, three previous churches occupied this same site and written records of the original St. Mary Abbots date back to the twelfth century. At this church many fashionable weddings take place; the receptions are often held in the Derry Rooms and sometimes in the Gardens. During the war St. Mary Abbots was badly blitzed, its roof was destroyed by fire.

I asked Mr. Tarvin if the roof garden suffered during the blitz. He took me to a tiled alcove in the Court of Fountains and directed my attention to a huge and ugly blunt-nosed thousand-pound bomb preserved there and inscribed, "This Nazi bomb broke on the structure on the night of April 16, 1941, but fortunately did not explode." Visitors read this in silence and turned subdued and thoughtfully away.

I said goodbye to Mr. Tarvin and to Miss Guy. The lift took me swiftly downwards through floors of merchandise and busy shoppers to the basement to seek the office of the Chairman of the Board of Derry and Toms and of John Barker and Co., for he is the Trevor Bowen whose inspiration and vision was and is responsible for these marvelous gardens.

A secretary told me that Mr. Bowen was due at a meeting in a few minutes. He could see me for a brief time only. In the short interval that we talked together, his interest in matters horticultural became apparent. He asked me to call again before I left England, but this I was unable to do. Since my return we have corresponded and from information sent me by Mr. Bowen I have learned much about his famous gardens. They took three years to construct. Well over a million people have visited them since they opened in 1938. One hundred and forty-two thousand came in 1949 alone. A small admission fee is charged. The money collected is donated to hospitals and other charities. Up to May 1950, over £53,000 was so disbursed.

Every American visiting London, England, whether particularly interested in gardens or not, should go to Derry and Toms' Department Store. There, in royal Kensington, is a truly regal garden.

HERBARIUM IN ACTION **(from page 11)**

principally through the energy of Dr. H. H. Rusby, and the herbarium of Princeton University, which was added in 1945.

Two invaluable accessions stand out among the lower plants. The mosses of the William Mitten collection and the fungi purchased from Professor B. Ellis, a retired teacher of New Jersey, form the bases, respectively, of the Garden's collections in these important groups. In all parts of the Herbarium are outstanding individual collections, of which the ferns of Dr. Lucien Underwood, the sedges of

K. K. Mackenzie, and the Mexican collection of George B. Hinton are but random examples.

During 1951 the Herbarium staff was busy for several months shifting the entire collection in order to incorporate two hundred fifty new steel cases. These replace many hundreds of cardboard boxes and represent a major improvement in the housing of the specimens. The new cases keep the plants dust-free and insect-proof, and they have changed the whole appearance of the second floor of the Museum Building. Over fifty per cent of the Herbarium is now housed in steel cases, the remainder being in wood. These wooden cases, unfortunately, do not offer the plants comparable protection and we look forward to their replacement.

Many of the specimens we study are well over one hundred years old, and a well-kept sheet should remain useful for at least twice that long. Peculiarly, in this business, age does not necessarily decrease the value of an herbarium specimen, but may enhance it. Such a permanent record of where a plant was growing on a certain date becomes increasingly significant as the tempo of man's destructive inroads upon nature continues to increase.

THE FOUNDING (from page 14)

Cruger as the additional members.

Although Dr. and Mrs. Britton, stimulated by the example of the Royal Botanic Gardens at Kew, were mainly responsible for the founding of The New York Botanical Garden, many others played their part, some of them long before the Brittons appeared upon the scene. Without doubt, Dr. David Hosack and his idea of a public botanical garden which might minister to the economic, physical and spiritual needs of man and publish an illustrated flora of the United States, had an influence. John Torrey, who labored long and fruitfully on the flora of the northeastern United States and for whom the Torrey Botanical Club was named, must be regarded as in part responsible for a botanical garden in this city. Columbia University was a major factor in the founding of the Garden and many individuals inspired by a devotion to their fellow citizens and a belief in the importance of knowledge about the plant kingdom, played their parts. It has been said many times that institutions are built from the lives of men and women. No one can examine the history of The New York Botanical Garden without realizing how true this is.

It is an unfortunate condition of mortals that the founders of an institution like this cannot come back and see the fruition of their dream. That privilege is limited to their descendants. However, the very fact that the founders of this institution cannot be present with us lays a heavy responsibility on those who are here to keep faith with them, and to see that the objectives and ideals they struggle for are carried out.

"Flowers of the Bible" opened December 17 as the annual Christmas exhibition of the Garden Club of America at its headquarters in the Hotel Madison, 15 E. 58th Street, New York City, and continues through January 18. It will be open to the public 2- 4 p.m. January 16 and 17. Featured in the exhibition are original water color paintings of biblical plants, prepared after many years of research by The New York Botanical Garden; also a collection of rare old botanical books dealing with biblical plants and dating back to 1653. Two large illuminated pages of excerpts from the forthcoming book, PLANTS OF THE BIBLE, by Dr. and Mrs. Harold N. Moldenke highlight the exhibition. These were artistically designed and lettered by Mrs. Elizabeth Reynolds, Chairman of the Exhibition Committee of the Garden Club of America.

Rare creches, some of which have never before been publicly exhibited, have been on display in the Museum Building of The New York Botanical Garden since December 15 and may be seen there until the end of the holiday season. Many are from the collection of Mrs. Howell Howard, who owns one of the finest collections of rare creches in America. Santons, 18th century figurines of the Holy Family, wise men, shepherds and beasts of the field, appear in the Nativity scenes. The Provencal santons have been loaned by Mrs. Richard Myers. Some of the figures in one of the large creches, made by the Exhibition Committee of The New York Botanical Garden, Mrs. Charles Burlingham, Chairman, have been loaned by Cooper Union Museum of Arts and Decoration. Through the courtesy of Scalamandre' Museum, two polychrome floral brocades, both 18th century Venetian, serve as background for two very precious creches.

from the HERB SHELF

VEAL CHOPS EN PAPILLOTE

Veal chops
Flour, butter, salt, pepper
Waxed paper, cooking oil
Parsley, shallots (2 for 6 chops)
Tarragon
Bread crumbs

Buy the finest chops possible. Dip them lightly in flour. Sauté them in a pan containing very hot butter; add salt and pepper. Brown chops well on both sides, but see that the butter does not burn. Do not put a cover on the pan. Cook until almost done. The next step is to get some pieces of paper ready for the chops, using a piece of wax paper large enough to hold one chop. Leave enough paper at the ends to twist tightly. Brush each piece lightly with oil, using a brush for this purpose. Chop finely and sauté parsley, shallots and tarragon. Place the chop in the center of the paper, but before doing this, scatter bread crumbs and small pieces of butter on the paper. Use one tablespoonful of sautéd herbs for each chop, adding a few more crumbs and dotting with more butter before closing paper. Cook in a medium oven, so the paper will not burn, for about twenty-five minutes. Serve in the papers.

ADRIENNE REED

Tarragon, *Artemisia dracunculus,* is a native of the Caspian Sea region and Siberia. It is a perennial aromatic herb which reaches a height of from one-and-a-half to two feet, and is cultivated like sage or mint. Plants may be set out either in spring or autumn and should be spaced about a foot apart. Tenacious and wet soils should be avoided. The plants grow best in an open, sunny position in poor soil.

The French regard tarragon as one of *Les Fines Herbes,* and rightly so, for it is the one herb that can stand on its own entirely. They find it an indispensable flavoring for salads and omelettes. However, the common French name for this plant, *estragon,* is derived from its use as a medicine. It has been called "dragon" because of the power attributed to it of curing the bites and stings of venomous snakes.

BOOK REVIEWS

GROWING WOODLAND PLANTS. Clarence and Eleanor G. Birdseye. 223 pages, illustrations (drawings by Walter L. Graham); glossary, index. Oxford University Press, New York. 1951. $4.

This is a book for every wildflower lover who has ever longed to move a clump of violets or ferns or ladyslippers from the woods to a garden. Mr. Birdseye with his wife's help, has given to his own woodland garden at Gloucester, Mass., the same patient study which he gave the frozen-foods business and, apparently, with the same success. The results of his work and study are now passed along to other gardeners.

The first part concerns the story of how the woodlands grow and how the soils are formed; why different locations have entirely different groups of plants; how the important types of soils and other growing conditions may be duplicated in a home garden; and last, but not least, how one may go about collecting the plants he wants. All this is written in simple language with the non-botanical gardener in mind, but it will be as fascinating to the experienced gardener as to the amateur. The serious student will find detailed instructions for testing soils in the woods and at home, and for making composted woodsoil to satisfy the whim of any woodland plant, whether it likes a highly acid or a neutral diet. The more easy-going gardener, with less time and inclination for fussing and checking, will find innumerable pointers for growing the easier kinds of woodland flowers and ferns.

The second part of the book contains simple descriptions and line drawings of about two hundred woodland plants from roughly north of Virginia and east of the Rockies, the plants with which the authors have experimented. It is not designed as an identification manual, but will do much to assist beginners. The notes include the type of woodland where each plant is usually found, its soil likes and dislikes, its behavior in cultivation.

The reader is asked not to follow the book slavishly, however. "Wildflower gardening is an art as well as a science, and its practice permits of almost infinite variety and initiative. Let Nature be your teacher . . . .Then mix your knowledge with imagination — and apply both to your garden."

The authors suggest working closely with local garden clubs and conservation groups, and stress the point that successful wildflower gardening can do much to save flowers which are fast becoming extinct in the wild. They offer the interesting idea that gardeners "swap with Nature" by taking surplus wildflowers to plant in the woods when collecting something new. This project would include valuable study on the gardener's part to be sure that suitable plants were taken to the new location. It is an amusing thought to wonder what the results may be a generation hence, with plants from the four corners of the continent mingling freely in some protected woodland acres!

All line drawings were by Walter L. Graham, who has done considerable botanical drawing for The New York Botanical Garden during the past eight years.

GRACE F. BABB
Portland, Maine

THE IRIS. N. Leslie Cave. 216 pages, illustrated, indexed. Crown Publishers, N. Y. 1951. $4.50.

This is a very worth-while book on a special subject which is almost completely covered, certainly for the intelligent amateur gardener who, of course, is the most likely to invest in this sort of book.

Naturally, the horticultural instructions are suitable for English gardens; but our country is so large and has such varied aspects of soil and climate that any iris enthusiast can get excellent ideas about unusual varieties to use in his particular district. One has only to remember the English climate, milder in the south and with much more rain than is usual here except, perhaps, in the upper eastern and western United States, near Canada. Varieties that need a drying-off season, as the oncocyclus sorts, should certainly be tried where there are semi-desert conditions part of the year. This really applies to all sorts of plants and I can never understand why gardeners are so limp about planting unusual species and varieties. The plants can be had with a little effort if one writes to a reliable old dealer and asks him what he *grows*. He never lists everything in his catalogue, he just hasn't enough of the rare things, but he will usually send you a letter with names and prices for small quantities and the determined collector and experimenter usually becomes very good friends with him!

Mr. Cave's book is extremely well written, clear and not repetitive and is up-to-date as to garden varieties. It should be pleasant reading for anyone, even the beginner, and the expert can find plenty of great interest. There are chapters on pollenization and the raising and selection of seedlings; hybridization for beginners; points for judging; diseases and pests; showing; and about many other important things.

The times for transplanting may be different in England from here, but would vary here also. For the vicinity of New York and lower New England, I find that just after the bloom is finished is the best time to transplant. Our hardier winters and the heaving of the ground in early spring are very bad for autumn-moved irises. New roots, coming shortly after the bloom, need to be long and firmly established by autumn. Then, where there is likely to be a long dry spell, fertilizing the soil could wait until the rains are due. All these things need a little judgment on the part of any gardener.

Mr. Cave says to head the bearded iris rhizomes all in one direction. This is good under certain circumstances, especially in a nursery bed; but I find the biggest difficulty, where there are several varieties, is to keep them apart. In the nursery bed, if more than one variety is used, the end rhizomes of each variety should face the end one of the previous variety at each end. For a group of several varieties in a border, perhaps with other flowers, a group made up of rhizomes facing outwards from the center, say three single or (farther apart) three double rhizomes of each variety. They make their own clumps and one can always tell which belongs in each clump. It is maddening to find one has given or received wrong or mixed plants. This is the only criticism, if it is one, I can make.

As for the illustrations, maps, lists, etc., they are excellent. The make-up of the book is fine, easy-to-read type and a handy arrangement of subjects — and the "Tailpiece" is a gem.

ETHEL ANSON S. PECKHAM
Sloatsburg, N. Y.

THE HYDRANGEAS. Michael Haworth-Booth. 185 pages, XXI plates, indexed. Macmillan, New York. (Printed in Great Britain.) 1951. $4.75.

This, the first book in English devoted to hydrangeas, is concerned primarily with the Hortensias *(Hydrangea macrophylla* and *Hydrangea serrata)* group, but the species generally, including those in cultivation and others known only from botanical specimens, are also described.

The author's real interest in the Hortensias is as garden shrubs rather than their more general use as florists' pot plants, and he points out that in the past the principal object of breeders has been to produce globose-headed forms suitable for the latter purpose.

He is of the opinion that both *Hydrangea macrophylla* and *Hydrangea serrata* are of hybrid origin, but under the name *Hydrangea maritima* makes a new species of E. H. Wilson's littoral *Hydrangea macrophylla normalis,* which the latter considered the parent form of *Hydrangea macrophylla.*

As for *Hydrangea serrata,* Haworth-Booth believes this name covers hybrids derived from three woodland species, namely *Hydrangea Thunbergii, Hydrangea japonica,* and *Hydrangea acuminata,* which Wilson included under *Hydrangea serrata* and two of its varieties.

The author's introduction to the book and the chapter on the history of the hydrangeas, though almost entirely devoted to the Hortensias, are interesting reading. There is an extensive chapter on the garden varieties of *Hydrangea macrophylla* and over three hundred are named with brief descriptions. Breeding, cultivation, propagation, forcing, pot culture, diseases and pests, use as garden shrubs and for tubs and vases, are other subjects covered in detail. The illustrations, reproduced from photographs, are generally excellent.

J. H. BEALE
Boyce Thompson Institute

LAWN AND GARDEN. Edited by Edward L. Throm and Betty M. Kanameishi. 176 pages, illustrated, indexed. Popular Mechanics, Chicago, Ill. 1951. $2.50.

Here is a book designed to turn the thumbs of all who read it a bright, fresh green. It provides all the information to do it, too — from an initial chapter on how to landscape to a final one on building back-yard merry-go-rounds for children.

So important to the beginner, the text comes clear. And it is most helpfully and

(Continued on page 30)

Wayside Gardens

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HYBRID DICENTRA, ***Bountiful.*** Finest "Bleeding Heart" to date. Vastly superior to Dicentra Eximia. Established plants bear 30 to 40 stalks of quaint, longer lasting, fuchsia-red flowers Spring and Fall.

SHASTA DAISY, ***Mark Riegel.*** Huge, gleaming white flowers with overlapping petals and soft yellow centers. Easy-to-grow, compact plants produce as many as 20 gorgeous daisies at one time.

Outstanding New SHRUBS

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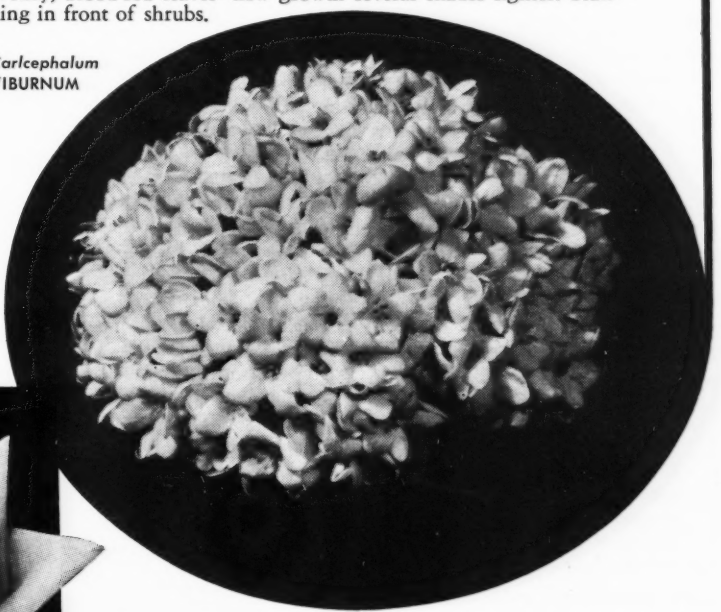
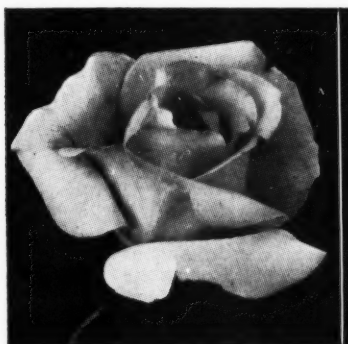
DWARF BARBERRY, ***Crimson Pygmy.*** You will love this vivid, new, miniature red-leafed Barberry that sparkles with brilliant highlights in the sun. Slow growing plants have lustrous, bronzy, blood-red leaves—new growth several shades lighter. Stunning in front of shrubs.

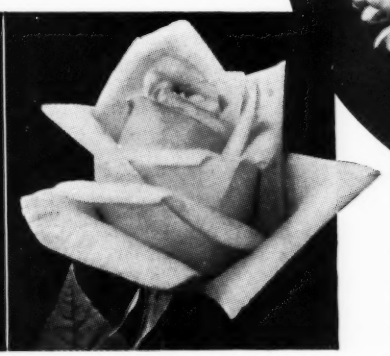
Carlcephalum
VIBURNUM



VIBURNUM, ***Carlcephalum.*** Originated in England, it captured highest honors at the Royal Horticultural Show. Enormous 6" clusters of fragrant white flowers bloom lavishly on graceful 6 ft. high plants. Of branching habit and quick growth, it does equally well in acid or alkaline soil. Hardy at 10 degrees below zero.



Hedda Hopper



Fred Howard

New ROSES for 1952

FRED HOWARD, 1952 AARS. Most delightful yellow hybrid tea of modern times. Strong, hardy plants produce rich yellow buds edged with soft pink from Spring until late Fall. Huge golden flowers make a nice contrast to reds and pinks.

HEDDA HOPPER. A unique new pink hybrid tea combining delicacy with sturdiness. Subtle fragrance and perfect petal formation make this a most outstanding introduction for 1952.

HELEN TRAUBEL, 1952 AARS. Rare new star in the rose kingdom. Unusual color varies from lively pink to luminous apricot, blending into rich orange. Sturdy plants bear a profusion of elegant flowers that are not affected by extremes in weather.

CONNIE MACK. New floribunda of rich, velvety crimson. A true aristocrat—hardy, disease-resistant and incredibly lovely. Aptly called the *florists' spray* rose, it is charming in arrangements.

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Our descriptive catalogue, sent upon request, lists seeds of the less usual species, alpines, bulbs, shrubs, conservatory exotics and the like.

BOOK REVIEWS **(from page 28)**

thickly supplemented with "how to do" diagrams, tables and photos.

But this is also a most exacting book, not to be dismissed as another primer even by the most advanced "green thumbs." In the first chapter on landscaping, for example, the reader will find that to plan his yard properly he may not get by with mind's eye or rough pencil designs.

He must do it all with scale models. For this he will require a draftsman's T-square, a 45-degree triangle, dividers, drawing board, thumb tacks. Even then he has only laid in his tools. For he must go on to put up a model house, plant a lawn of green blotting paper, stake out shrubs moulded from green putty —

"The scale layout may seem a lot of trouble," say the editors. "But it can be a lot of fun." Possibly — though not for this reader who is all thumbs, and none green.

Anyway, that's the book, exacting, complete, informative. Helpful too, for it gives all the weapons for fighting garden enemies, all the techniques for planning and planting fine grass, beautiful flowers, healthy shrubs and trees, abundant vegetable rows — all that, and some very pleasing designs for building your own yard furniture along with the merry-go-rounds.

HAROLD M. TURNER, JR.
Bronxville, N. Y.

THE AURICULA. Sir Rowland Biffen. 164 pages, 7 plates. Cambridge University Press, New York. (Printed in Great Britain.) 1951. $3.

The history of the origin and development of this unique and beautiful primula is presented in a manner to appeal to the informed and scientifically minded reader as well as the seeker of general information.

Of great interest is the chapter on the theory accounting for the widely diversified coloring in the auricula, as it has developed through the years from factors inherent in its supposed alpine parents, the yellow *Auricula alpina* and rosy *Primula hirsuta.*

The history of the strange and beautiful edged flowers that evolved early in cultivation is an absorbing story in itself, as also the story of the rivalry to produce and exhibit these types among the florists and growers of those early days.

These edged sorts are little known in America, although small numbers may be found in good collections in Canada and the eastern states. In Oregon and Washington, there are many keen growers and classes featuring auriculas have been included in the shows of The American Primrose Society.

Many beautiful flowers are found in the so-called "Alpine Auricula" and "Border" types, and these are particularly adapted to growing in gardens and rock gardens here.

The author points out that the culture of the auricula today is simplified in comparison with the methods used by the old growers. No longer are the weird composts of "bullock's blood, goose dung and sugar-baker's scum" advocated. A simple diet of porous, humus soil with bonemeal is recommended, instead.

This book will be an important one to all who love and grow auriculas and is especially welcome with the interest in these primulas growing in the United States.

BETTY JANE HAYWARD
Scarborough, Maine

HOLLAND'S HANDBOOK FOR SOUTHERN GARDENERS. Ben Arthur Davis. 240 pages, illustrated, indexed. Farrar, Straus & Young, Inc., New York. 1951. $3.

Ben Arthur Davis, for many years Garden Editor for Holland's Magazine, has written a most useful little book for southern gardeners. It is timely, for there have been few books covering this region. He expressly states that it is written for the amateur gardener and in this he is consistent throughout, for his information is practical, directions clear-cut and simple. With this volume in hand, any intelligent person, no matter how inexperienced, can make an attractive garden.

He says he learned by the good old trial-and-error method, and this is evident. He gives so many little "tips" that can be learned only by long experience. Just as an example, he warns gardeners in the Deep South to order from northern nurseries in early fall, *only.* I have learned this same thing, but oh, by what bitter experience! When my shrubs, ordered in late fall, did not come, I would write and urge their immediate shipment. The reply would be, "We cannot dig plants now, as the ground is frozen up. We will ship in early spring." Now, to me, "early spring" meant late February or March. Of course, the shrubs did not reach me till late April or early May, with the resultant loss of many of them.

Mr. Davis also knocks out nonsensical ideas one sees advanced occasionally — such as the notion that decaying oak leaves produce alkalinity. In his directions for tree planting, he stresses the importance of pouring in water before all the soil is in. Many times have I seen printed instructions which said, "fill in soil, pack with a short piece of timber, then water." This method, of course, leaves dangerous air-pockets among the roots.

His suggestions for planting home grounds could apply equally well in most any region, except that the selection of species would differ. This is also true of his clear-cut discussion of soils, fertilizers, and pruning. I should like to take exception to his inclusion of Aronia among the shrubs to be pruned immediately after blooming. The shining red fruits of *Aronia arbutifolia* are even more beautiful than the flowers, and these would be lost if pruning took place in spring. If done in fall, the sprays of fruits can be used in the house.

The author gives excellent lists of shrubs, perennials, and annuals for southern gardens, including many attractive native species. No list, of course, is complete, but I regret that he omitted our fine native Hydrangea, *H. quercifolia.* It is valuable for its ability to produce great panicles of creamy bloom in full shade. Among perennials, I wonder that he did not give more attention to the Louisiana iris, as it is coming into its own as a showy garden plant.

Under bulbs, he lists most of the dependable varieties, but it seems to me that he puts too little emphasis on crinums. Many varieties are hardy and carefree and, once planted properly, require little attention for years to come. My experience with hyacinths is that they require a clay soil. In my acid sand hills, I grow them with difficulty. On the other hand, all the narcissi flourish and multiply in my sandy land. Mr. Davis does say that if the soil is light and poor, the addition of a little clay may be advisable in growing hyacinths. . .with me it is *much* clay. I have the same experience with roses, except the species roses. All the hybrid teas that I have tried demanded heavy clay soil, particularly that containing iron gravel. Those living in sandy regions can grow our native species without any extra exertion; also lovely old Harison's Yellow and *Rosa hugonis.*

In the list of trees for home grounds, I should certainly substitute maples, both red and southern sugar maples, for sycamore. The roots of the latter reach great distances and push up adjacent concrete and brick walks. They create constant litter and are not half as beautiful as the maples.

But these small suggestions are not intended to detract in any way from the usefulness of this book. His directions for making seed-beds, his grouping of plants for various sites, and other information are more than worth the price of this volume. It fulfills its purpose, to guide ambitious but uninformed persons in the making of a satisfying garden.

CAROLINE DORMON
Saline, La.

WEED SEEDLINGS. Anna P. Kummer. 435 pages, drawings by author; indexed. University of Chicago Press, Chicago, Ill. 1951. $5.

A new book which, in colloquial language, might be entitled "How to tell the Plants from the Weeds" is Anna P. Kummer's

(Continued on page 32)

NEWS, NOTES and COMMENTS

Conservatory Exhibits. More than 800 chrysanthemum plants added color to the special exhibit, "By a Japanese Waterfall" in the Conservatory of The New York Botanical Garden during the better part of November. The garden, complete with teahouse, gateway and bridge, was highlighted by a waterfall which cascaded into a rocky pool and flowed on to a quieter foreground pool in which water-lilies and lotus grew. A feature of the show was a reproduction in water color, by the oriental artist, Eduardo Salgada, of a painting by the Japanese artist Ichiryusai-Hiroshige. The painting depicted a Torii, a typical gateway-like structure rising from rocks that jut from the sea.

Visitors to the Conservatory during December—and until January 12—have been enjoying the warmth of the tropical island, "Puerto Rico, U.S.A." with its lush and beautiful trees and tropical flowers. The "powder puff tree" (calliandra) with its fat pom-poms of scarlet flowers, and the "egg tree" (an agave) particularly caught their fancy. An interesting feature was the authentic reproduction of the "Haunted Sentry Box" of San Cristobal Fortress, San Juan. The Puerto Rican Christmas, the traditional "Three Kings' Day", on January 6, was also celebrated in the Conservatory with appropriate ceremonies—and Puerto Rican carols were sung during the holidays.

The reproduction of the Nativity scene was so greatly admired by throngs of people during the Christmas holidays of 1950, that The New York Botanical Garden repeated it this year.

Museum Exhibits. Decorative plastic panels and screens were displayed in the Museum Building of The New York Botanical Garden from November 3 until the middle of December. Emile Norman of Big Sur, California, combined grasses, ferns, seaweed, leaves, flowers and butterflies into interesting patterns and mounted them in plastics. Mr. Norman had no formal art training—he developed the technique he uses in these decorative plastic panels as a means of preserving his collected specimens of West Coast flora. His work is to be seen on the SS. Independence and Constitution of the American Export Lines and he has executed screens and panels for public places and private residences throughout this country and abroad.

Saturday Afternoon Programs. The Winter 1952 series of free Saturday afternoon programs opens on January 5 with a motion picture in color, "Plants and Birds for the Autumn Garden", by Alfred Runk. The complete program has been mailed to all members of The New York Botanical Garden. Other interested parties may have a copy by addressing The New York Botanical Garden, Bronx Park, New York 58, N. Y.

Winter 1952 Courses of Study. For twelve consecutive Monday evenings, starting January 7, Dr. David D. Keck will teach Plant Breeding; Dr. H. N. Moldenke will conduct a Systematic Botany Laboratory on the same evening. Tabea Hofmann will instruct eight sessions in Flower Painting for Amateurs on Thursday mornings—the first class on January 10; Arthur King will instruct six sessions in Outdoor Flower Gardening on alternate Thursday evenings, the first session on January 10. Full particulars may be obtained by writing The New York Botanical Garden, Bronx Park, New York 58, N. Y.

Garden Symposium at Williamsburg. T. H. Everett, Horticulturist of The New York Botanical Garden, will be one of the speakers at the second session of the Garden Symposium to be held in historic Williamsburg. The first session is scheduled for Monday through Wednesday, February 25—27; the second Monday through Wednesday, March 3—5. Mr. Everett will survey garden conditions in his talk "How Does Your Garden Grow?" At the same session Mrs. Mary Deputy Lamson, Landscape Architect of New York City will discuss "Design for Outdoor Living" and Henry T. Skinner of the Morris Arboretum, Philadelphia, will discuss "Broadleaved Evergreens".

Among the speakers at the first session will be Jan de Graaff of the Oregon Bulb

Some of the finest floral compositions ever seen at fall shows were exhibited at the Seventh Annual Chrysanthemum Show at The New York Botanical Garden. Mrs. Robert Nathan of New Rochelle, N. Y., won the Lucius Bates cup (Mr. Bates is President of the National Chrysanthemum Society) and the tri-color for her arrangement of gourds, grasses and mosses around a scarecrow figurine. Her arrangement was entitled "The goblins will get you".

The sixty-four competitive classes at the Seventh Annual Chrysanthemum Show at The New York Botanical Garden brought forth many well-grown specimens of hardy varieties of chrysanthemums and also some tender varieties. The latter are grown with some protection — a burlap covered shelter—but not in a greenhouse. Pictured above is the display of cut blooms arranged for effect by Mrs. John M. Spader of Mamaroneck, N. Y., which won one of the two gold medals awarded at the show. The other gold medal was awarded to Totty's of Madison, N. J., for its collection of beautiful chrysanthemums.

Farm and author of 'THE NEW BOOK OF LILIES'; Richard Korbobo, Extension Specialist in Ornamental Horticulture of New Jersey College of Agriculture; Raymond C. Allen, Secretary of the American Rose Society; Harold Hume, Dean Emeritus of the College of Agriculture, University of Florida.

Volunteer Associates. Mrs. Henry Steeger, after serving for more than a year as chairman of the Volunteer Associates, has been succeeded by Mrs. James Cox Brady.

During Mrs. Steeger's term great strides were made. The theatre benefit under the chairmanship of Mrs. Harold R. Mixsell was the most productive the Garden had enjoyed. The Members' Days through the efforts of Mrs. Charles G. Proffitt and her committee were well attended and the downtown lecture series under the co-chairmanship of Mrs. Clarance Stanley and Mrs. Madison Lewis exceeded past records. The booth at the International Flower Show, handled by Mrs. Richard Meredith and her committee produced a satisfactory financial profit and contributed to the overall publicity of the Garden. The spring tours conducted by Mrs. John G. Winchester and her committee brought many new individuals in close contact with the Garden and its functions. The New York Botanical Garden is indebted to Mrs. Steeger for her untiring and gracious leadership, and extends its many thanks to her.

To Mrs. James Cox Brady, The New York Botanical Garden extends its congratulations and best wishes, with the knowledge that continued success lies ahead.

Rancho Santa Ana Botanic Garden. Formerly of Anaheim, California, The Rancho Santa Ana Botanic Garden has announced its affiliation with the Associated Colleges at Claremont, California. The herbarium and portions of the botanical library of Pomona College are now combined with and housed in the administration building of the Garden and members of the Garden staff will offer courses in the Claremont Graduate School. Occupying an eighty-acre tract at the north edge of Claremont, the Garden has completed considerable fencing, pipe-laying, construction of buildings and planting of many thousand trees and shrubs. Its new mail address is 1500 N. College Avenue, Claremont, California. Dr. Philip Munz is the Director of the Botanic Garden.

BOOK REVIEWS (from page 30)

recently-published *Weed Seedlings.* In 420 pages of illustrations plus short descriptions, the author cites three hundred common broad-leaved weedy plants of the North Central states.

Though designed primarily for use in this area, the work of necessity includes many species of a much wider range, thus rendering it useful for reference beyond its prescribed limits. Concentration is upon early stages, from germination through the fifth leaf (or leaf pairs), each stage illustrated by a clear-cut unshaded drawing. Comparison of the species is greatly facilitated by the uniform scale maintained throughout (natural size for the primary seedling and twice-natural for later leaf details).

Technical terms are kept at a minimum, and though no glossary is provided for the terms employed, these are quite clearly defined in the valuable simplified identification key.

The book should prove of very great interest not only to the botanist but likewise to the horticulturist, the farmer, county agent, weed inspector, nurseryman, and to anyone who has or hopes to have a garden. In the reviewer's opinion, its value to these latter groups would be enhanced by a supplement illustrating mature stages of all species here considered.

The author is to be congratulated on her pioneer work in a needy field; and other areas might profitably be treated in like manner.

HELEN M. GILKEY
Oregon State College

THE INVASION OF NEW ZEALAND BY PEOPLE, PLANTS AND ANIMALS. Andrew Hill Clark. 465 pages, illustrations, bibliography, index. Rutgers University Press, New Brunswick, N. J. 1949. $6.

One of the most interesting developments of the present time has been the emergence of social history and here A. H. Clark has broken new ground in a masterly exposition of the origin and progress of a small community in the South Pacific. His book tells a fascinating story built on a solid foundation of facts and the very attractive title, although perhaps slightly misleading, may be pardoned on the grounds that a fuller and more accurate one would be too cumbersome. The book deals almost exclusively with the South Island and not with the country as a whole.

The author gives one of the finest descriptions of the territory that I have read and, after showing how it came to be populated by Maoris and Europeans, goes on to tell of the arrival and distribution of all the more important of the exotic plants and animals. Probably few of our local historians would agree with his suggestion that after the race for the South Island, the French deliberately waited in the background until after British sovereignty had been declared.

There are several sweeping generalizations after the manner of Bernard Shaw, generalizations with just sufficient truth to require considerable knowledge and an imposing array of facts in order to confute them. For example, we are told that the soils of the plains lacked humus and fertility such as allowed great tracts of Australia and North America to be cropped continuously in wheat for decades without resorting to artificial manures. True, but not the truth. Later it is said that the rural population, being mainly of urban stock lacks "any solid rural tradition" being without any "peasant-like feeling of love for the land and the countryside" and that the farm is considered chiefly as a money-making unit like a factory. Now, those two statements simply do not fit in.

The soil is thin, rarely more than six inches deep, but the New Zealand Department of Agriculture says that our agricultural husbandry is so good that our production compares very favorably with that of the deep continental soils and is three times that of Victoria, Australia. It is undoubtedly true that in the early days the land was, in all too many cases, treated as a commodity by absentee owners, but that phase died out with the break-down of the great stations and the intensive cultivation of the smaller farms. The Department of Agriculture says the reason for our comparatively high productivity is a thorough understanding of the land and its requirements. Wheat has always been intercropped with grass and animal husbandry so as to conserve fertility, a system brought from the small farms of England and showing a true continuation of rural tradition.

The book should be read by every serious student of the New Zealand scene, and should be of value to all who are interested in the development of European cultivation under alien skies.

A. W. ANDERSON
Timaru, New Zealand

The Japanese Garden in the Conservatory of The New York Botanical Garden, November, 1951.

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Five different, hardy, evergreen, flowering shrubs: *R. catawbiense* (purple, June); *R. carolinianum* (pink, May); *R. maximum* (white, July. Likes shade); *Mt. Laurel* (Kalmia) pink-white, May; *Leucothoe* (Andromeda) white, April.

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- Any five plants selected as you wish **$16.75.** (Express about $4).

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True named varieties on own roots — hardier, bushier, better. Your choice of colors: Red, pink, rose, purple, white.

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New Gable varieties, dwarf, showy: *Rosebud* (double, pink), *Charlotte* (lavender, red spots), *Chinook* (flame red), *Claret* (bronze-red), *Corsage* (orchid), *Herbert* (crimson), *Royalty* (bright purple).

Size: 3-year XX, 4-10 inch, branched

- Any of above plants **$10.00** postpaid.
- 5 of any one kind for **$9.00** postpaid.
- 50 plants (in tens) **$65.00** (express).

OLDER EVERGREEN AZALEAS

Fine varieties: *Hexe* (deep-red), *Hinodigiri* (scarlet), *Macrantha Double* (salmon-red, late), *Mary* (pink), *Betty* (rose).

Size: 8-12 inch bushy plants B&B

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HOLLY GROUP

Hardy native evergreen small trees: red berries all winter.

Size: 3-inch pot plants, about 8 in.

- 6 plants (4 females (red berries), and 2 males for pollen) all for **$7.50** postpaid.

CHINESE CHESTNUT

Sweet old-fashioned nuts on a small, blight-free tree. Extra healthy, vigorous, easily grown. Plant at least 3 for pollination.

Size: 2-3 feet transplanted

- 3 trees for **$6.75** postpaid.
- 25 for **$35.00** (express not paid).

Size: 3-5 feet transplanted

- 3 for **$7.50** (express about $1).

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Plant two or more in one hole for quick, inexpensive clumps.

(Express, not paid)	(5)	(25)
• Gray-birch, 4-6 ft.	**$7.50**	**$25.00**
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WHITE-FLOWERING DOGWOOD

Handsomest native small tree. The following will be blooming in one to two years:—

Size: 4 to 6 feet, lightly branched

- 5 for **$10.00,** express not prepaid.
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RARE FLOWERING TREES

Unusual kinds that add distinction to your garden.

Franklinia (Gordonia) White, Aug.-Oct. Plants 3-4 ft., **$6.25** each postpaid. 5-6 ft., **$12.00** (express not paid).

Pink-flowering dogwood. Pink, May. Plants 3-4 ft., **$7.75** each, postpaid.

Double Dogwood. White, like little roses, May. Plants 2-3 ft., **$7.50** each, postpaid.

Laburnum Vossi (Goldenchain). Yellow, May. 4-5 ft., **$4.50** each (express not paid).

Dawn Redwood (Metasequoia), oldest known living tree, rare alive but common in fossils! 1 to 2 ft., **$7.50** each postpaid.

Hardy Mimosa (Albizzia rosea). Pink, July. 1½-2 ft. plants, **$3.75.** postpaid.

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Assorted named varieties, large berries, fine flavor, correct for pollination:

Size: 18-24 inch, 3-year-olds

- 10 for **$11.25,** postpaid.
- 50 for **$40.00,** express (not paid).

Size: 2-3 ft., 4-year bearing age

- 10 for **$15.00,** express (not paid).

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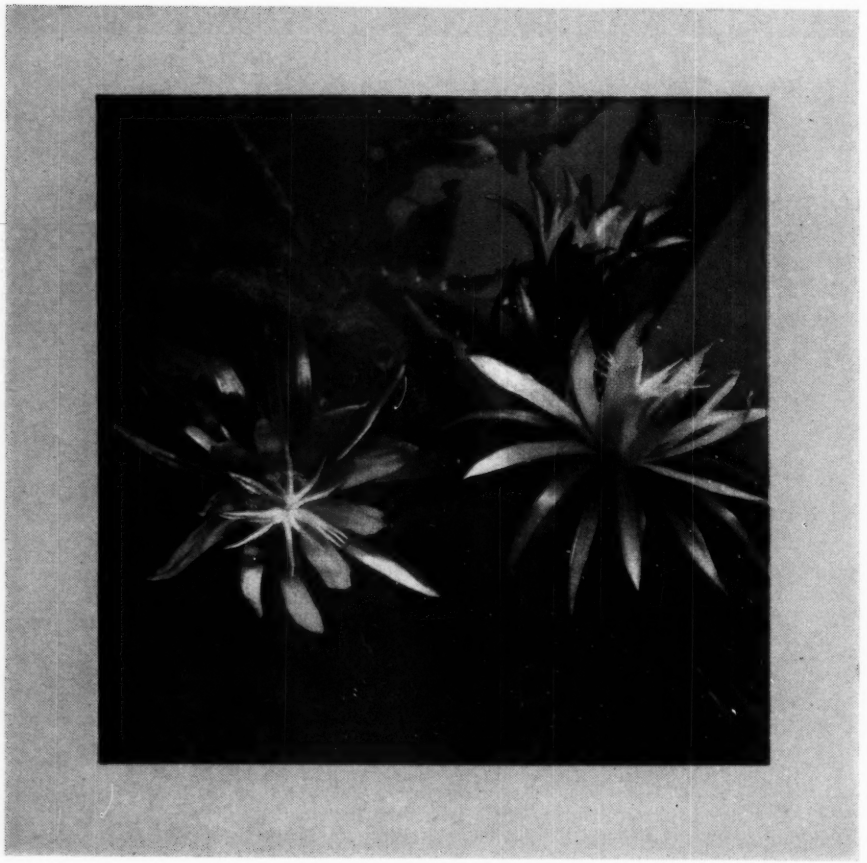

One of the most interesting of jungle cacti is the newly discovered *Cryptocereus anthonyanus*. While first found by T. MacDougall in the jungles of the state of Chiapas in Mexico in January 1946, it could not be given a name until it flowered in June 1950. Then, it was named by the undersigned in honor of Dr. H. E. Anthony of Englewood, N. J. This picture is of the second flowering in June 1951. This plant is of the group of cacti which require both heat and moisture for their well-being, but differs from most of them in its climbing habit, using aerial roots to pull itself up into the trees. The deeply lobed stems are also unusual, looking like large, coarse fishbones. Its flowers are intensely fragrant and last but a single night. They are beautifully colored, the combination of maroon and cream-yellow making a striking contrast.

Mr. MacDougall has been responsible for the discovery of many new and interesting plants in southern Mexico, a number of which are growing in the living plant collections of The New York Botanical Garden.

E. J. ALEXANDER